Caribbean Agrometeorological Initiative (CAMI)

Ray Motha
Chief Meteorologist
USDA/OCEWAOB

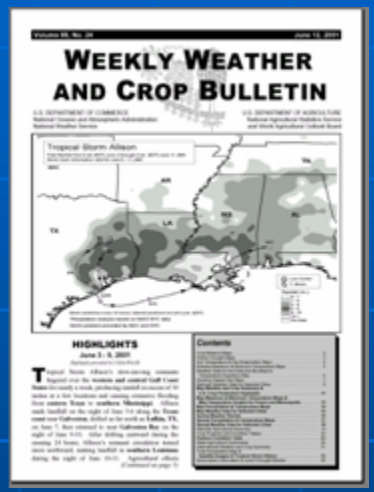
USDA Agricultural Weather Facility

- Operated by USDA/OCE (Washington, D.C.) since 1978, with NOAA/NWS meteorologists providing weather data and forecasting support to the USDA facility.
- Mission: Keep the Nation's growers, USDA commodity analysts, as well as the Secretary and top staff informed of world-wide weather related developments and their effects on crops and livestock
- USDA agricultural meteorologists receive global weather data, products, and expertise in interpretation of forecast models from NWS, and merge these products with climatological analyses and global agronomic data to determine weather's impact on agricultural production

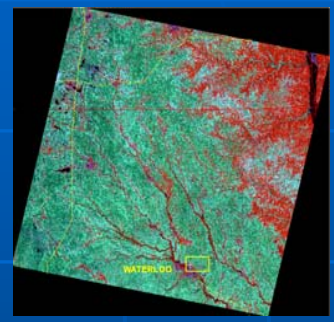
Background Information

The United States Department of Agriculture has numerous interests in the field of weather monitoring and impact assessment:

Fire Weather



Global Monitoring and Assessment



Ground Truth for Remote Sensing

Western Water Supply Forecasting

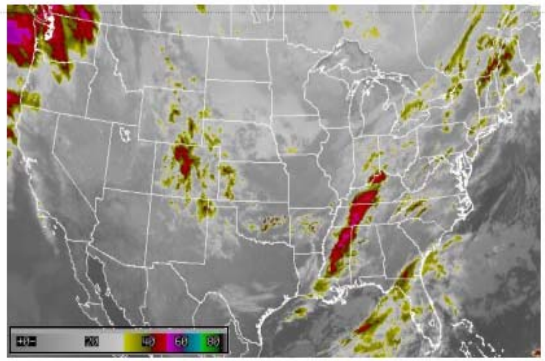
Research

Crop Insurance Programs

World Agricultural Outlook Board

Routine Daily Operational Assessments

- Morning US Weather Update
- Daily Highlights of Agricultural Developments
- Special Reports



Satellite image with enhanced low cloud-top temperatures (degrees C) for 7:15 a.m. EDT *(NOAA)*

Agricultural Weather Highlights - Friday - November 15, 2002

- *In the West*, cool weather favors autumn fieldwork, following a period of highly beneficial precipitation. Although recent soil moisture improvements are aiding *Northwestern* winter wheat, more precipitation is needed to ensure proper autumn establishment.
- *On the Plains*, cool, unsettled weather is slowing winter wheat development and hampering final summer crop harvesting. Across the *northern and central High Plains*, light rain and snow showers are boosting soil moisture reserves for wheat establishment.
- *In the Corn Belt*, widespread precipitation (rain and wet snow) is slowing final summer crop harvesting in the *Ohio Valley*, but cool, dry weather prevails elsewhere in the *Midwest*.
- *In the South*, showers are causing some renewed fieldwork delays from the *lower Mississippi Valley northward into the Tennessee Valley*. Cotton harvesting in the *Delta States* typically nears completion by mid-November, but one-quarter to one-third of the crop currently remains in the field.

Outlook: A developing storm system will track northward along the *East Coast* during the weekend, bringing widespread rainfall to the *Atlantic Coast States*. Snow is possible across the *interior Northeast* and rain will likely change to snow in the *central Appalachians*. In the storm's wake, unseasonably cold weather will affect areas as far south as the *Gulf Coast States*. Elsewhere, dry, warmer weather will prevail across the *Plains and Southwest*, while scattered showers are possible in the *Pacific Northwest*. The NWS 6-10 day outlook for November 20-24 calls for below-normal precipitation for much of the Nation, except for wet weather in *Washington and Maine*. Warmer-than-normal weather is expected across the *western half of the U.S.* and the *Midwest*, while below-normal temperatures are forecast in the *eastern Gulf Coast and southern Atlantic States*.

Contact: Brad Rippey, Agricultural Meteorologist, USDA/OCE/WAOB, Washington, D.C. (202-720-2397)

Types of Agricultural Weather Extremes Affecting Crop Development

- Prolonged Drought
- Heat Stress During Critical Phases of Development
- Untimely Heavy Rain/Flooding
- Freeze Damage at Seeding Emergence or Before Crop Maturity
- Hurricanes:

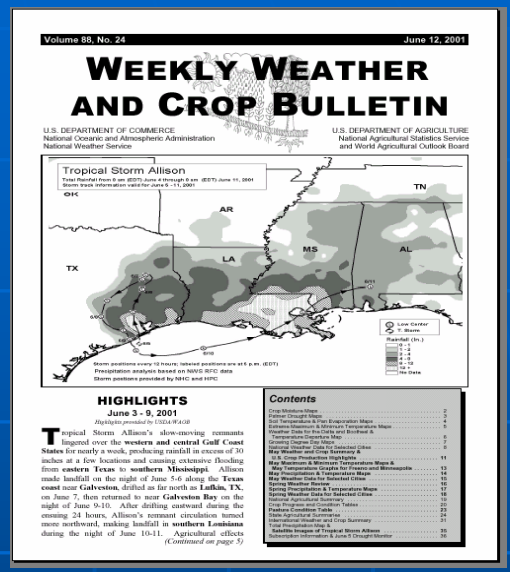
  Direct Impact - Flooding, wind damage

  Indirect Impact – Excessive moisture

- Severity, extent of coverage, duration, and timing with respect to crop phenology and crop variety is essential to analysis

Routine Weekly Operational Assessments

- Interagency Cooperation and Coordination
- Weekly Weather and Crop Bulletin
  - Weather Analysis (NOAA)
  - US Agriculture Summary (NASS)
  - Weather & Crop Summaries (WAOB)
- USDA Secretary Briefing
  - Highlight Relevant Weather Impacts for USDA Secretary & Top Staff
- Drought Monitor
- Global Weather Briefing for USDA Analysts
- Media & Public Contacts


Volume 88, No. 24 June 12, 2001

WEEKLY WEATHER AND CROP BULLETIN

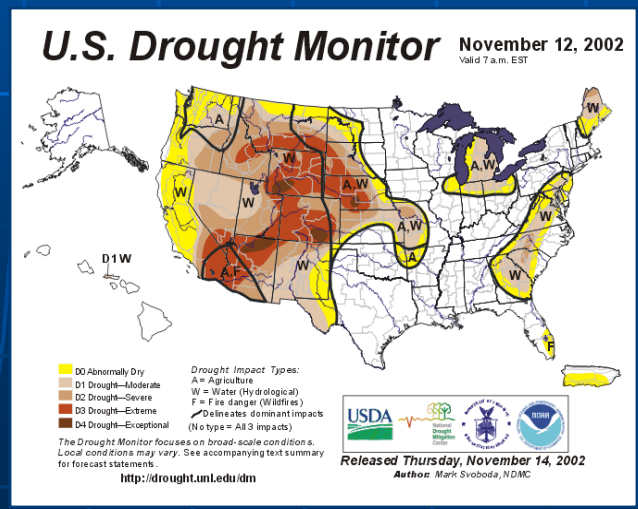
U.S. DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
National Weather Service

U.S. DEPARTMENT OF AGRICULTURE
National Agricultural Statistics Service
and World Agricultural Outlook Board

Tropical Storm Allison

HIGHLIGHTS
June 3 - 9, 2001

Contents


U.S. Drought Monitor November 12, 2002
Valid 7 a.m. EST

D0 Abnormally Dry
D1 Drought—Moderate
D2 Drought—Severe
D3 Drought—Extreme
D4 Drought—Exceptional

Drought Impact Types:
A = Agriculture
W = Water (Hydrological)
F = Fire danger (Wildfires)
Delineates dominant impacts
(No type = All 3 impacts)

The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. See accompanying text summary for forecast statements.

http://drought.unl.edu/dm

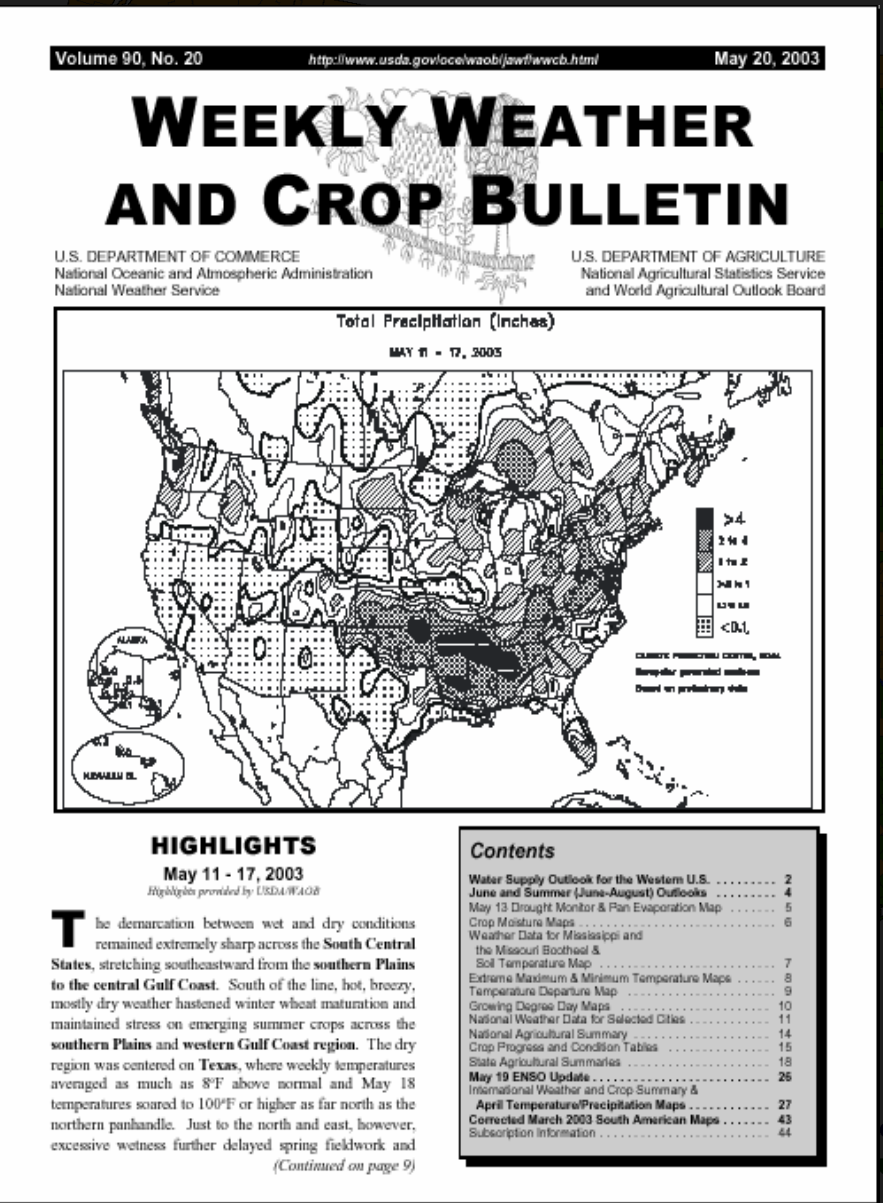
Released Thursday, November 14, 2002
Author: Mark Svoboda, NDMC

World Agricultural Outlook Board

WEEKLY WEATHER AND CROP BULLETIN

History

- Product of 100+ years of evolution
- 1872: Weekly Weather Chronicle
  - published by U.S. War Department
  - brief summary of domestic weather
- 1888: Weather Crop Bulletin
  - basic crop weather analyses for U.S.
- Since then, undergone several name, content, management changes
- 1924: final name change
- Comprehensive collection of text, tables, and maps describing weather impacts on domestic and international crop production



Volume 90, No. 20 http://www.usda.gov/oce/waob/jawf/wwcb.html May 20, 2003

WEEKLY WEATHER AND CROP BULLETIN

U.S. DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
National Weather Service

U.S. DEPARTMENT OF AGRICULTURE
National Agricultural Statistics Service
and World Agricultural Outlook Board

Total Precipitation (inches)

MAY 11 - 17, 2003

HIGHLIGHTS

May 11 - 17, 2003

Highlights provided by USDA/WAOB

The demarcation between wet and dry conditions remained extremely sharp across the **South Central States**, stretching southeastward from the **southern Plains to the central Gulf Coast**. South of the line, hot, breezy, mostly dry weather hastened winter wheat maturation and maintained stress on emerging summer crops across the **southern Plains** and **western Gulf Coast region**. The dry region was centered on **Texas**, where weekly temperatures averaged as much as 8°F above normal and May 18 temperatures soared to 100°F or higher as far north as the northern panhandle. Just to the north and east, however, excessive wetness further delayed spring fieldwork and

(Continued on page 9)

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WEEKLY WEATHER AND CROP BULLETIN

Text Products

18 Weekly Weather and Crop Bulletin May 20, 2003

State Agricultural Summaries

These summaries, issued weekly through the summer growing season, provide brief descriptions of crop and weather conditions important on a national scale. More detailed data are available in Weather and Crop Bulletins published each Monday by NASS State Statistical Offices in cooperation with the National Weather Service. The crop weather reports are also available on the Internet through the NASS Home Page on the World Wide Web at http://www.usda.gov/nass/ or from LAWF at http://www.usda.gov/oce/waob/jawf.

ALABAMA: Days suitable for fieldwork 3.4. Topsoil 1% very short, 8% short, 28% adequate, 63% surplus. Corn 93% planted, 98% 2002, 98% avg.; 82% emerged, 87% 2002, 89% avg. Soybeans 12% planted, 25% 2002, 28% avg.; 4% emerged, 15% 2002, 16% avg. Winter wheat 1% very poor, 7% poor, 38% fair, 47% good, 7% excellent. Pasture feed 0% very poor, 3% poor, 33% fair, 50% good, 14% excellent. Livestock condition 0% very poor, 3% poor, 24% fair, 55% good, 18% excellent. Rains continued to delay fieldwork across the state. Activities: Fertilizing hayfields, pastures, controlling weeds, working cattle for spring herd health management.

ALASKA: Days suitable for fieldwork 5.0. Topsoil 5% short, 95% adequate. Planting was underway across the state last week. Temperatures were slightly below normal, most areas received some rain. Daytime high temperatures were mostly in the mid to high fifties. Lows were in the twenties to mid-thirties. Planting of barley 75% complete statewide, last week 20% of the crop was planted. Planting of oats 60% complete, last week less than 5% of the crop was planted. Planting of potatoes began this week with 15% of the crop being reported as seeded. Vegetable crops were being transplanted/seeded. Livestock conditions 10% fair, 75% good, 15% excellent.

ARIZONA: Temperatures for the State were at or above average for the week. Cotton 80% planted, 95% 2002, 94% 5-yr avg. Alfalfa conditions were mostly good, with harvest progressing at a normal rate. Small grain development still remains behind normal because of the extended cool spring temperatures. With no precipitation reported at any of the 17 reporting stations, Range, pasture feeds have not improved.

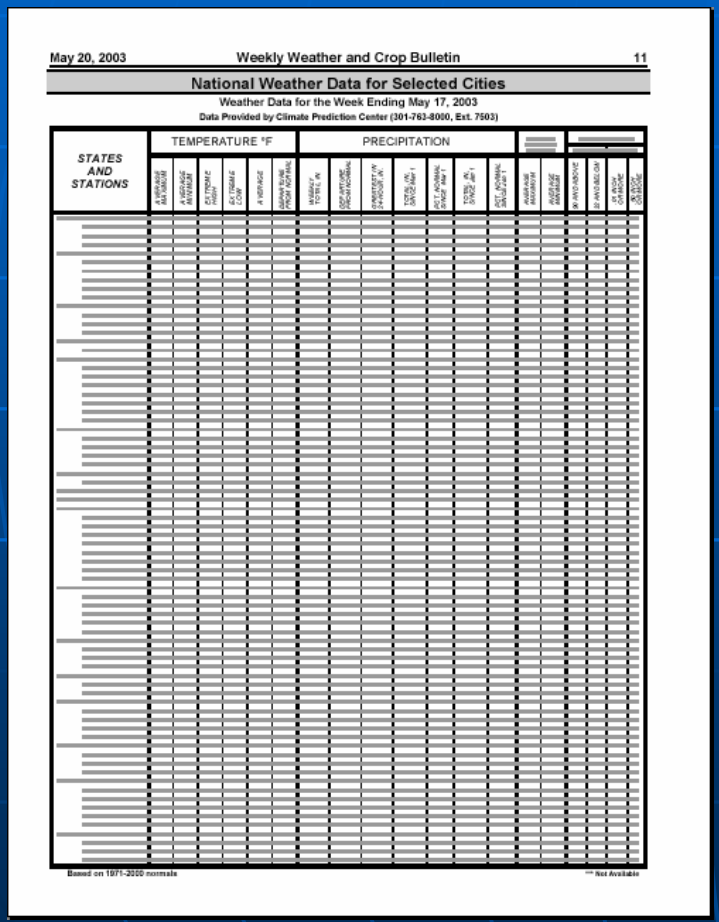
ARKANSAS: Days suitable for fieldwork 4. Soil 1% very short, 6% short, 54% adequate, 39% surplus. Corn 100% planted, 100% 2002, 99% 5 - yr avg.; 100% emerged, 98% 2002, 94% 5- yr avg.; 0% very poor, 4% poor, 22% fair, 56% good, 18% excellent. Soybeans: 35% planted, 31% 2002, 35% 5 - yr avg.;28% emerged, 24% 2002, 21% 5-yr avg. Sorghum 92% planted, 93% 2002, 87% 5- yr avg.; 80% emerged, 86% 2002, 77% 5- yr avg. Cotton 60% planted, 74% 2002, 79% 5- yr avg.; 50% emerged, 56% 2002, 53% 5- yr avg. Rice 93% planted, 92% 2002, 90% 5- yr avg.; 87% emerged, 82% 2002, 75% 5-yr avg.; 1% very poor, 4% poor, 24% fair, 54% good, 17% excellent. Winter Wheat 99% headed, 100% 2002, 100% 5- yr avg.; 1% very poor, 10% poor, 29% fair, 46% good, 11% excellent Hay other 0% very poor, 4% poor, 47% fair, 43% good, 6% excellent Hay Alfalfa 0% very poor, 1% poor, 33% fair, 63% good, 3% excellent Pasture, Range 1% very poor, 5% poor, 32% fair, 50% good, 12% excellent FIELD CROPS: Winding up planting, fertilizing, administering weed control were the main activities across the state during the week. The recommended time line to fertilize corn, sorghum is drawing to an end, nonetheless producers efforts to topdress, side dress nitrogen have been hampered because of the rains. In both the eastern, western portions of the state, rain and hail was reported to have lodged wheat fields. Early wheat was turning color, should be ready to harvest in a few weeks. Strawberries were being harvested. Tomatoes, peaches were being sprayed for disease, pest control. LIVESTOCK: Livestock were reported to be in good condition with many herds being sprayed for ticks. Producers are vaccinating, worming, administering fly control, culling cows. Many pastures are being fertilized, being sprayed for weeds. Where possible, first cuttings of hay were made, but reported short because of the dry early season. Some hay cuttings were lost due to the rain.

CALIFORNIA: Warm, sunny weather improved growth in cotton fields, as cultivation, irrigation were underway in many fields. Some cotton plants began to emerge. Cotton planting continued in most areas, a few fields were replanted due to poor germination. Pesticide treatments to control aphids began. Harvesting proceeded in mature grain fields. Stubble was windrowed, drying. Unharvested fields of wheat, barley, oats were drying, being prepared for harvest. Stripe rust was reported in some wheat fields, causing yield reductions. Winter forage fields were cut for silage or green-chopped, as only a few fields remained to be harvested. Oat hay fields were harvested, several wheat fields were cut for silage. Fields of alfalfa hay, seed alfalfa continued to show strong growth. Alfalfa hay was cut, windrowed, dried, baled. Field corn for seed, animal feed, other uses continued to show good growth, was being irrigated. Late planting of some corn fields continued. Sugar beets continued to exhibit vigorous growth. Irrigation, fungicide treatments were underway in many fields. Planting of rice fields continued in many areas. Rice has emerged in early-planted fields. Dry lima bean planting was underway. Sweet potato planting continued. The picking, packing of stone fruit gained momentum as warm weather, sunny skies prevailed. Poppy and Earliest apricots, Springcrest, Super Rich, Queen Crest peaches, Mayfire and May Glo nectarines were harvested. Brooks, Tulare, Kings, Rainier cherries were picked and packed. Splitting was evident in early cherry varieties due to damp, rainy weather experienced during April. Fruit thinning continued in many stone fruit orchards; treatments to control disease, insect pests were made as necessary. Wine, raisin, table grape vineyards were cultivated, treated with fungicides, insecticides. Cane training, leaf pulling, treatments to thin, lengthen fruit clusters were underway in some table grape vineyards. Open blossoms were noted in a few grape vineyards. Removal of grape vineyards continued in most districts. Bright red blooms were open in many pomegranate orchards in Fresno County. Strawberries for processing were harvested in Merced County. Avocado, olive trees were blooming. Irrigation, applications of fungicides, insecticides were underway in some citrus orchards. Harvest of the Navel orange crop slowed, while Valencia orange harvest continued to gain momentum. Lemons were harvested in the Central Valley. Steady development continued in almond orchards; heavily laden branches were propped up in many orchards. Irrigation, treatments to control diseases, insect pests were made in almond, walnut, pistachio orchards. Walnuts were treated for codling moth, blight. Weather conditions were relatively favorable for vegetable production. Fresh market, processing tomato planting continued. Freezer lima bean, watermelon planting began. Garlic plantings were maturing steadily and nearing their harvest cycle. Onion harvesting was underway in some fields with the sacks of bulbs spread in the sun for drying. Maturing onion fields were prepared for harvest. Honeydew planting started late due to cold spring temperatures. Processing tomatoes were growing steadily, blooming. Steady growth continued in fields of eggplant, peppers, squash, sweet corn, cucumbers. Cool temperatures continued slowing melon development. Some asparagus fields in the San Joaquin Valley continued to produce marketable spears, but their season was nearly finished. Broccoli, lettuce continued to be harvested. Small leeks, red onions, squash, sweet peas were picked in the Central Valley. The following vegetables were also harvested: artichokes, basil, cabbage, carrots, celery, cilantro, fava beans, mustard greens, parsley, radicchio, spinach. Foothill pastures were beginning to dry in northern state.

- **State Agricultural Summaries" provided by National Agricultural Statistics Service (NASS)**
- **Provide brief narrative of crop and weather conditions on a state-by-state basis**
- **Include information on topsoil moisture, days suitable for fieldwork, type of fieldwork, weather**

WEEKLY WEATHER AND CROP BULLETIN

Tables



May 20, 2003 Weekly Weather and Crop Bulletin 11

National Weather Data for Selected Cities

Weather Data for the Week Ending May 17, 2003

Data Provided by Climate Prediction Center (301-763-8000, Ext. 7503)

STATES AND STATIONS	TEMPERATURE °F					PRECIPITATION									

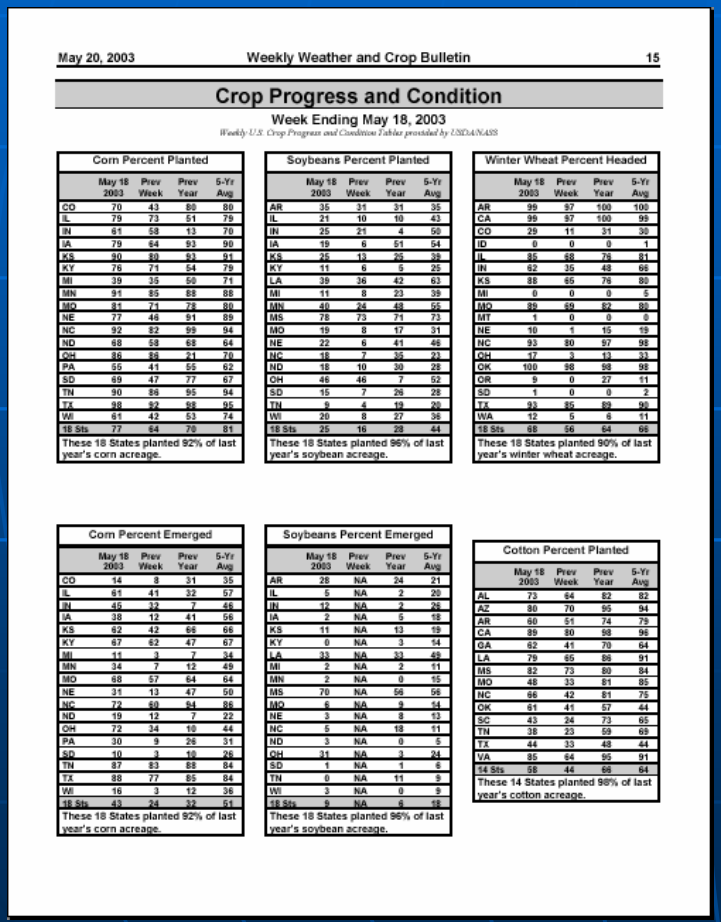
Based on 1971-2000 normals

*** Not Available

- "National Weather Data for Selected Cities" provided by NOAA Climate Prediction Center
- Station-by-station tabulation of data
- Temperature
  - average maximum/minimum
  - extreme high/low
- Precipitation
  - weekly total, departure from normal
  - greatest in 24-hr, total this month
- Maximum/minimum relative humidity
- Number of days…
  - temp > 90F, measurable precip occurs

WEEKLY WEATHER AND CROP BULLETIN

Tables



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Crop Progress and Condition

Week Ending May 18, 2003

Weekly U.S. Crop Progress and Condition Tables provided by USDA/NASS

Corn Percent Planted

	May 18 2003	Prev Week	Prev Year	5-Yr Avg
CO	70	43	80	80
IL	79	73	51	79
IN	61	58	13	70
IA	79	64	93	90
KS	90	89	93	91
KY	76	71	54	79
MI	39	35	50	71
MN	91	85	88	88
MO	81	71	78	89
NE	77	46	91	89
NC	92	82	99	94
ND	68	58	68	64
OH	86	86	21	70
PA	55	41	55	62
SD	69	47	77	67
TN	90	86	95	94
TX	98	92	98	95
WI	61	42	53	74
18 Sts	77	64	70	81

These 18 States planted 92% of last year's corn acreage.

Soybeans Percent Planted

	May 18 2003	Prev Week	Prev Year	5-Yr Avg
AR	35	31	31	35
IL	21	10	10	43
IN	25	21	4	50
IA	19	6	51	54
KS	25	13	26	38
KY	11	6	5	25
LA	39	36	42	63
MI	11	8	23	39
MN	40	24	48	55
MS	78	73	71	73
MO	19	8	17	31
NE	22	6	41	46
NC	18	7	35	23
ND	18	10	30	28
OH	46	46	7	52
SD	15	7	26	28
TN	9	4	19	26
WI	20	8	27	36
18 Sts	25	16	28	44

These 18 States planted 96% of last year's soybean acreage.

Winter Wheat Percent Headed

	May 18 2003	Prev Week	Prev Year	5-Yr Avg
AR	99	97	100	100
CA	99	97	100	99
CO	29	11	31	30
ID	0	0	0	1
IL	85	68	78	81
IN	62	35	48	66
KS	88	65	78	80
MI	0	0	0	5
MO	89	69	82	80
MT	1	0	0	0
NE	10	1	15	19
NC	93	80	97	98
OH	17	3	13	33
OK	100	98	98	98
OR	9	0	27	11
SD	1	0	0	2
TX	93	85	89	90
WA	12	5	6	11
18 Sts	68	56	64	66

These 18 States planted 90% of last year's winter wheat acreage.

Corn Percent Emerged

	May 18 2003	Prev Week	Prev Year	5-Yr Avg
CO	14	8	31	35
IL	61	41	32	57
IN	45	12	7	46
IA	38	12	41	56
KS	62	42	66	66
KY	67	62	47	67
MI	11	3	7	34
MN	34	7	12	49
MO	68	57	64	64
NE	31	13	47	50
NC	72	69	94	86
ND	19	12	7	22
OH	72	34	10	44
PA	30	9	26	31
SD	10	3	10	26
TN	87	83	88	84
TX	88	77	85	84
WI	16	3	12	36
18 Sts	43	24	32	51

These 18 States planted 92% of last year's corn acreage.

Soybeans Percent Emerged

	May 18 2003	Prev Week	Prev Year	5-Yr Avg
AR	28	NA	24	21
IL	5	NA	2	20
IN	12	NA	3	24
IA	2	NA	5	18
KS	11	NA	13	19
KY	0	NA	3	14
LA	33	NA	33	49
MI	2	NA	2	11
MN	2	NA	0	15
MS	70	NA	56	56
MO	6	NA	9	14
NE	3	NA	8	13
NC	5	NA	18	11
ND	3	NA	0	5
OH	31	NA	3	24
SD	1	NA	1	6
TN	0	NA	11	9
WI	3	NA	0	9
18 Sts	9	NA	9	18

These 18 States planted 96% of last year's soybean acreage.

Cotton Percent Planted

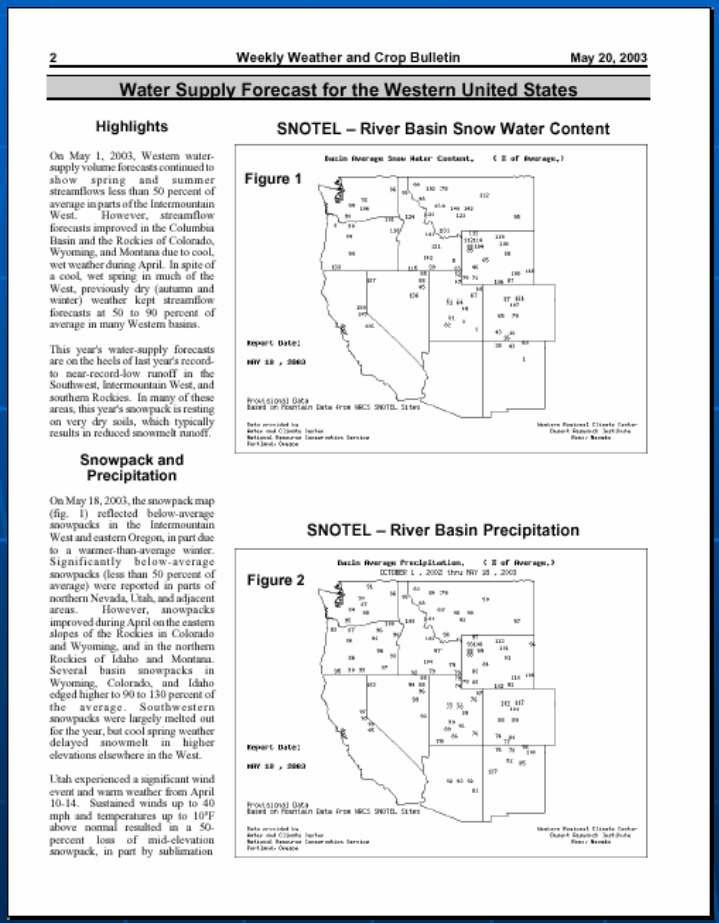
	May 18 2003	Prev Week	Prev Year	5-Yr Avg
AL	73	64	82	82
AZ	80	70	95	94
AR	60	51	74	79
CA	89	80	98	96
GA	62	41	70	64
LA	79	65	86	91
MS	82	73	80	84
MO	48	33	81	85
NC	66	42	81	75
OK	61	41	57	44
SC	43	24	73	65
TN	38	23	59	69
TX	44	33	48	44
VA	85	64	95	91
14 Sts	58	44	66	64

These 14 States planted 98% of last year's cotton acreage.

- "Crop Progress and Condition" tables provided by NASS
- For each crop, provides a state-by-state tabulation of the current stage of crop development
  - e.g., corn planting, filling, harvesting
- Quantifies…
  - current progress, last week's progress
  - last year's progress at this time
  - 5-yr average
- Crop condition tables state-by-state
  - percent VP, P, F, G, EX
- Tables available for many major crops

WEEKLY WEATHER AND CROP BULLETIN

Maps



2 Weekly Weather and Crop Bulletin May 20, 2003

Water Supply Forecast for the Western United States

Highlights

On May 1, 2003, Western water-supply volume forecasts continued to show spring and summer streamflows less than 50 percent of average in parts of the Intermountain West. However, streamflow forecasts improved in the Columbia Basin and the Rockies of Colorado, Wyoming, and Montana due to cool, wet weather during April. In spite of a cool, wet spring in much of the West, previously dry (autumn and winter) weather kept streamflow forecasts at 50 to 90 percent of average in many Western basins.

This year's water-supply forecasts are on the heels of last year's record- to near-record-low runoff in the Southwest, Intermountain West, and southern Rockies. In many of these areas, this year's snowpack is resting on very dry soils, which typically results in reduced snowmelt runoff.

Snowpack and Precipitation

On May 18, 2003, the snowpack map (fig. 1) reflected below-average snowpacks in the Intermountain West and eastern Oregon, in part due to a warmer-than-average winter. Significantly below-average snowpacks (less than 50 percent of average) were reported in parts of northern Nevada, Utah, and adjacent areas. However, snowpacks improved during April on the eastern slopes of the Rockies in Colorado and Wyoming, and in the northern Rockies of Idaho and Montana. Several basin snowpacks in Wyoming, Colorado, and Idaho edged higher to 90 to 130 percent of the average. Southwestern snowpacks were largely melted out for the year, but cool spring weather delayed snowmelt in higher elevations elsewhere in the West.

Utah experienced a significant wind event and warm weather from April 10-14. Sustained winds up to 40 mph and temperatures up to 10°F above normal resulted in a 50-percent loss of mid-elevation snowpack, in part by sublimation

SNOTEL – River Basin Snow Water Content

Figure 1

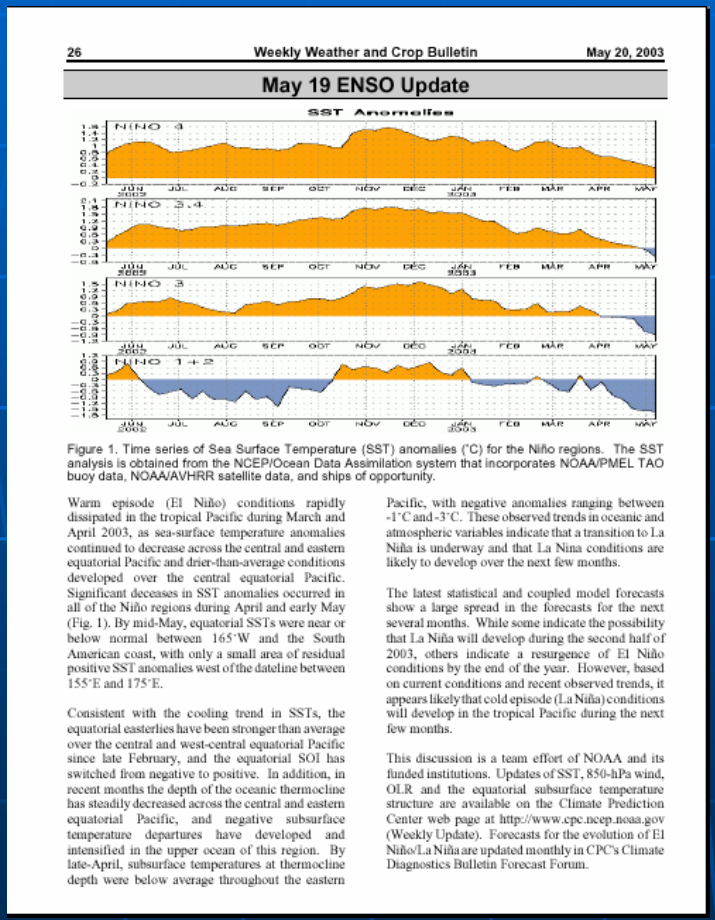
SNOTEL – River Basin Precipitation

Figure 2

- **Several maps published periodically to provide more detailed description of crop weather in U.S.**
  - **mountain snow pack and precip**
  - **stream flow forecasts**
  - **seasonal temp/precip outlooks**
  - **drought indices**
  - **growing degree days**
  - **soil temperatures**

WEEKLY WEATHER AND CROP BULLETIN

Special Products



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May 19 ENSO Update

SST Anomalies

Figure 1. Time series of Sea Surface Temperature (SST) anomalies (°C) for the Niño regions. The SST analysis is obtained from the NCEP/Ocean Data Assimilation system that incorporates NOAA/PMEL TAO buoy data, NOAA/AVHRR satellite data, and ships of opportunity.

Warm episode (El Niño) conditions rapidly dissipated in the tropical Pacific during March and April 2003, as sea-surface temperature anomalies continued to decrease across the central and eastern equatorial Pacific and drier-than-average conditions developed over the central equatorial Pacific. Significant deceases in SST anomalies occurred in all of the Niño regions during April and early May (Fig. 1). By mid-May, equatorial SSTs were near or below normal between 165°W and the South American coast, with only a small area of residual positive SST anomalies west of the dateline between 155°E and 175°E.

Consistent with the cooling trend in SSTs, the equatorial easterlies have been stronger than average over the central and west-central equatorial Pacific since late February, and the equatorial SOI has switched from negative to positive. In addition, in recent months the depth of the oceanic thermocline has steadily decreased across the central and eastern equatorial Pacific, and negative subsurface temperature departures have developed and intensified in the upper ocean of this region. By late-April, subsurface temperatures at thermocline depth were below average throughout the eastern Pacific, with negative anomalies ranging between -1°C and -3°C. These observed trends in oceanic and atmospheric variables indicate that a transition to La Niña is underway and that La Nina conditions are likely to develop over the next few months.

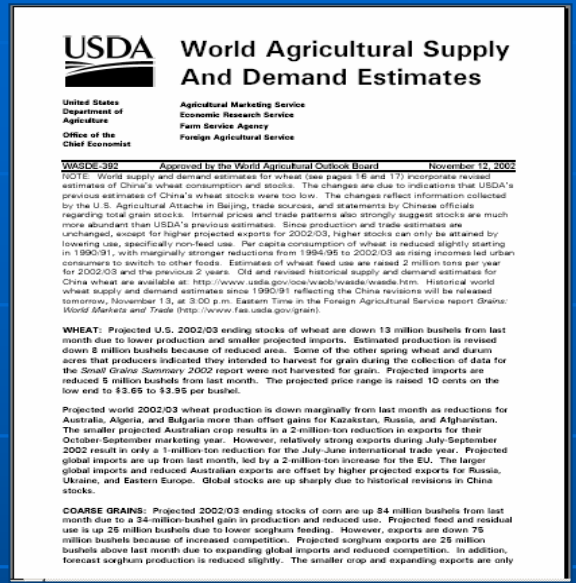
The latest statistical and coupled model forecasts show a large spread in the forecasts for the next several months. While some indicate the possibility that La Niña will develop during the second half of 2003, others indicate a resurgence of El Niño conditions by the end of the year. However, based on current conditions and recent observed trends, it appears likely that cold episode (La Niña) conditions will develop in the tropical Pacific during the next few months.

This discussion is a team effort of NOAA and its funded institutions. Updates of SST, 850-hPa wind, OLR and the equatorial subsurface temperature structure are available on the Climate Prediction Center web page at http://www.cpc.ncep.noaa.gov (Weekly Update). Forecasts for the evolution of El Niño/La Niña are updated monthly in CPC's Climate Diagnostics Bulletin Forecast Forum.

- **Special articles / products published when climate anomalies and extreme events occur**
  - **ENSO updates**
  - **severe weather**
  - **other disasters**

Monthly Operational Assessments

- World Agricultural Supply and Demand Estimates Report (WASDE) lockup Analyses
  - Crop-weather assessments are integrated into USDA's monthly crop production estimation procedures
- World Agricultural Weather Highlights Map



USDA

World Agricultural Supply And Demand Estimates

United States Department of Agriculture
Office of the Chief Economist

Agricultural Marketing Service
Economic Research Service
Farm Service Agency
Foreign Agricultural Service

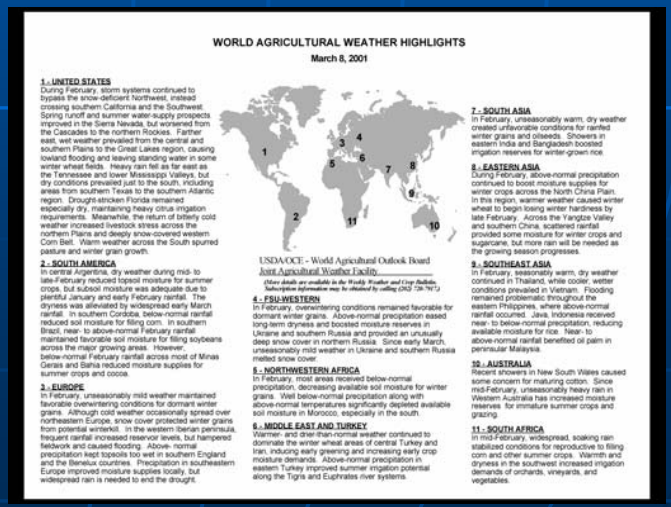
WASDE-392 Approved by the World Agricultural Outlook Board November 12, 2002

NOTE: World supply and demand estimates for wheat (see pages 16 and 17) incorporate revised estimates of China's wheat consumption and stocks. The changes are due to indications that USDA's previous estimates of China's wheat stocks were too low. The changes reflect information collected by the U.S. Agricultural Attache in Beijing, trade sources, and statements by Chinese officials regarding total grain stocks. Internal prices and trade patterns also strongly suggest stocks are much more abundant than USDA's previous estimates. Since production and trade estimates are unchanged, except for higher projected exports for 2002/03, higher stocks can only be attained by lowering use, specifically non-feed use. Per capita consumption of wheat is reduced slightly starting in 1990/91, with marginally stronger reductions from 1994/95 to 2002/03 as rising incomes led urban consumers to switch to other foods. Estimates of wheat feed use are raised 2 million tons per year for 2002/03 and the previous 2 years. Old and revised historical supply and demand estimates for China wheat are available at: http://www.usda.gov/oce/waob/wasde/wasde.htm. Historical world wheat supply and demand estimates since 1990/91 reflecting the China revisions will be released tomorrow, November 13, at 3:00 p.m. Eastern Time in the Foreign Agricultural Service report *Grains: World Markets and Trade* (http://www.fas.usda.gov/grain).

WHEAT: Projected U.S. 2002/03 ending stocks of wheat are down 13 million bushels from last month due to lower production and smaller projected imports. Estimated production is revised down 8 million bushels because of reduced area. Some of the other spring wheat and durum acres that producers indicated they intended to harvest for grain during the collection of data for the *Small Grains Summary 2002* report were not harvested for grain. Projected imports are reduced 5 million bushels from last month. The projected price range is raised 10 cents on the low end to $3.65 to $3.95 per bushel.

Projected world 2002/03 wheat production is down marginally from last month as reductions for Australia, Algeria, and Bulgaria more than offset gains for Kazakstan, Russia, and Afghanistan. The smaller projected Australian crop results in a 2-million-ton reduction in exports for their October-September marketing year. However, relatively strong exports during July-September 2002 result in only a 1-million-ton reduction for the July-June international trade year. Projected global imports are up from last month, led by a 2-million-ton increase for the EU. The larger global imports and reduced Australian exports are offset by higher projected exports for Russia, Ukraine, and Eastern Europe. Global stocks are up sharply due to historical revisions in China stocks.

COARSE GRAINS: Projected 2002/03 ending stocks of corn are up 84 million bushels from last month due to a 34-million-bushel gain in production and reduced use. Projected feed and residual use is up 25 million bushels due to lower sorghum feeding. However, exports are down 75 million bushels because of increased competition. Projected sorghum exports are 25 million bushels above last month due to expanding global imports and reduced competition. In addition, forecast sorghum production is reduced slightly. The smaller crop and expanding exports are only



WORLD AGRICULTURAL WEATHER HIGHLIGHTS

March 8, 2001

1 - UNITED STATES
During February, storm systems continued to bypass the snow-deficient Northwest, instead crossing southern California and the Southwest. Spring runoff and summer water-supply prospects improved in the Sierra Nevada, but worsened from the Cascades to the northern Rockies. Farther east, wet weather prevailed from the central and southern Plains to the Great Lakes region, causing lowland flooding and leaving standing water in some winter wheat fields. Heavy rain fell as far east as the Tennessee and lower Mississippi Valleys, but dry conditions prevailed just to the south, including areas from southern Texas to the southern Atlantic region. Drought-stricken Florida remained especially dry, maintaining heavy citrus irrigation requirements. Meanwhile, the return of bitterly cold weather increased livestock stress across the northern Plains and deeply snow-covered western Corn Belt. Warm weather across the South spurred pasture and winter grain growth.

2 - SOUTH AMERICA
In central Argentina, dry weather during mid- to late-February reduced topsoil moisture for summer crops, but subsoil moisture was adequate due to plentiful January and early February rainfall. The dryness was alleviated by widespread early March rainfall. In southern Cordoba, below-normal rainfall reduced soil moisture for filling corn. In southern Brazil, near- to above-normal February rainfall maintained favorable soil moisture for filling soybeans across the major growing areas. However, below-normal February rainfall across most of Minas Gerais and Bahia reduced moisture supplies for summer crops and cocoa.

3 - EUROPE
In February, unseasonably mild weather maintained favorable overwintering conditions for dormant winter grains. Although cold weather occasionally spread over northeastern Europe, snow cover protected winter grains from potential winterkill. In the western Iberian peninsula, frequent rainfall increased reservoir levels, but hampered fieldwork and caused flooding. Above- normal precipitation kept topsoils too wet in southern England and the Benelux countries. Precipitation in southeastern Europe improved moisture supplies locally, but widespread rain is needed to end the drought.

USDA/OCE - World Agricultural Outlook Board
Joint Agricultural Weather Facility

(More details are available in the Weekly Weather and Crop Bulletin. Subscription information may be obtained by calling (202) 720-7673.)

4 - FSU-WESTERN
In February, overwintering conditions remained favorable for dormant winter grains. Above-normal precipitation eased long-term dryness and boosted moisture reserves in Ukraine and southern Russia and provided an unusually deep snow cover in northern Russia. Since early March, unseasonably mild weather in Ukraine and southern Russia melted snow cover.

5 - NORTHWESTERN AFRICA
In February, most areas received below-normal precipitation, decreasing available soil moisture for winter grains. Well below-normal precipitation along with above-normal temperatures significantly depleted available soil moisture in Morocco, especially in the south.

6 - MIDDLE EAST AND TURKEY
Warmer- and drier-than-normal weather continued to dominate the winter wheat areas of central Turkey and Iran, inducing early greening and increasing early crop moisture demands. Above-normal precipitation in eastern Turkey improved summer irrigation potential along the Tigris and Euphrates river systems.

7 - SOUTH ASIA
In February, unseasonably warm, dry weather created unfavorable conditions for rainfed winter grains and oilseeds. Showers in eastern India and Bangladesh boosted irrigation reserves for winter-grown rice.

8 - EASTERN ASIA
During February, above-normal precipitation continued to boost moisture supplies for winter crops across the North China Plain. In this region, warmer weather caused winter wheat to begin losing winter hardiness by late February. Across the Yangtze Valley and southern China, scattered rainfall provided some moisture for winter crops and sugarcane, but more rain will be needed as the growing season progresses.

9 - SOUTHEAST ASIA
In February, seasonably warm, dry weather continued in Thailand, while cooler, wetter conditions prevailed in Vietnam. Flooding remained problematic throughout the eastern Philippines, where above-normal rainfall occurred. Java, Indonesia received near- to below-normal precipitation, reducing available moisture for rice. Near- to above-normal rainfall benefited oil palm in peninsular Malaysia.

10 - AUSTRALIA
Recent showers in New South Wales caused some concern for maturing cotton. Since mid-February, unseasonably heavy rain in Western Australia has increased moisture reserves for immature summer crops and grazing.

11 - SOUTH AFRICA
In mid-February, widespread, soaking rain stabilized conditions for reproductive to filling corn and other summer crops. Warmth and dryness in the southwest increased irrigation demands of orchards, vineyards, and vegetables.

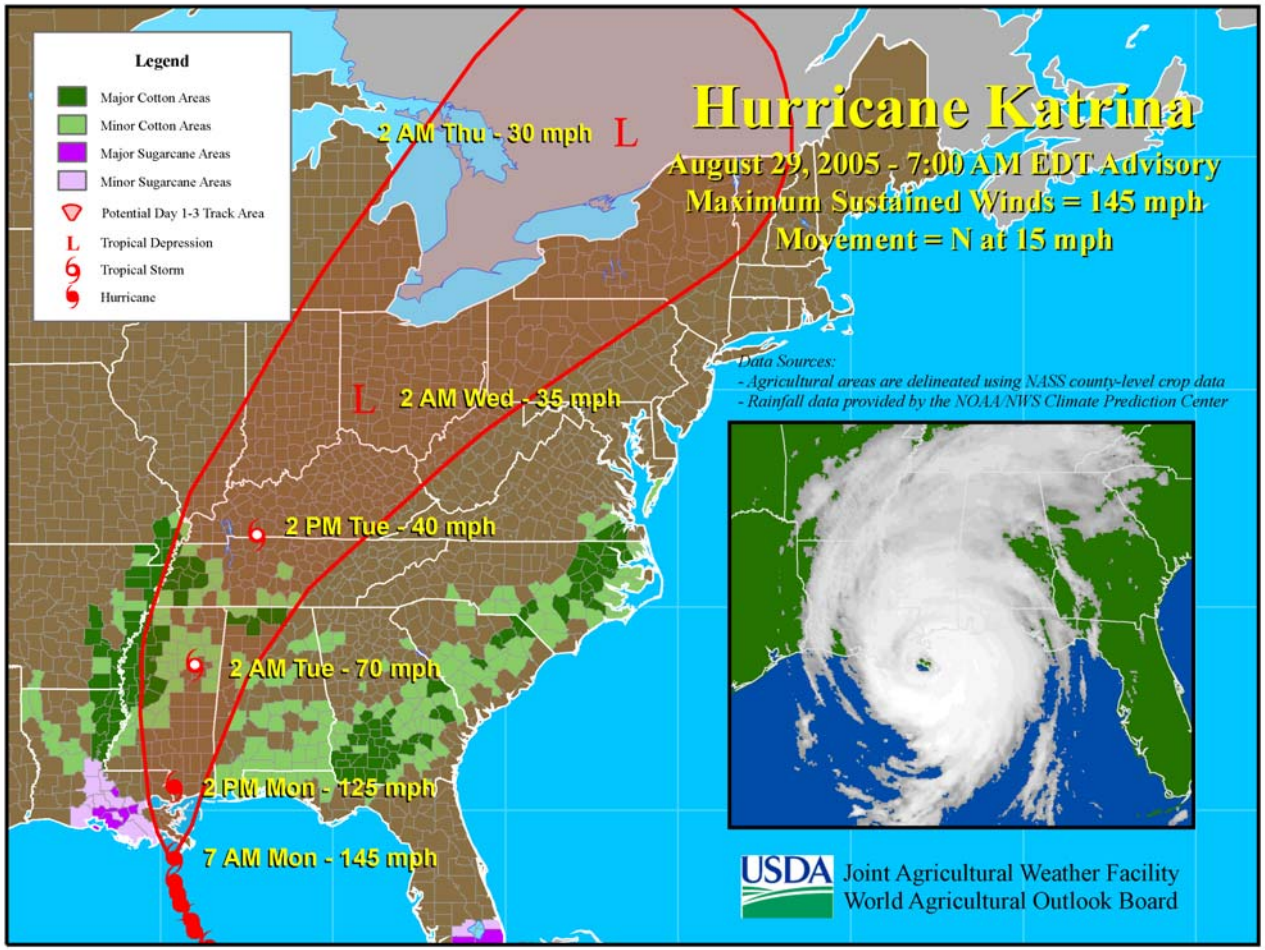
Feedback Mechanisms

- **Secretary of Agriculture, Chief Economist**: Decisions are made based on early alerts, from daily advisories and weekly bulletins (i.e., US Drought Monitor); and monthly from crop weather analysis in WASDE report.

- **Farmers, farm groups**: Feedback provided from WWCB and Drought Monitor reports on a periodic basis.

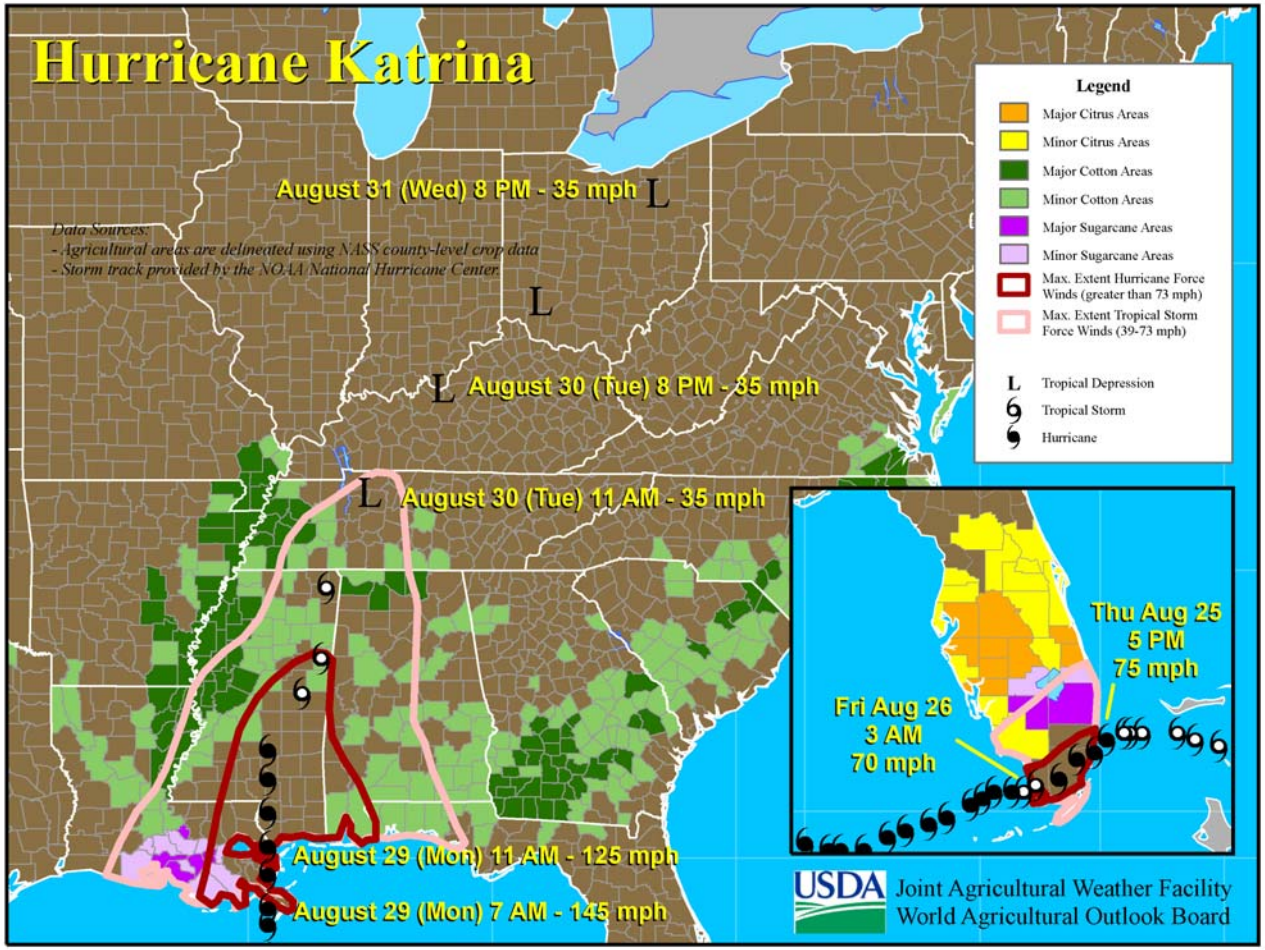
- **Public**: All reports are issued on Internet.

During a Storm's Strike: Regular Updates for Top USDA Staff



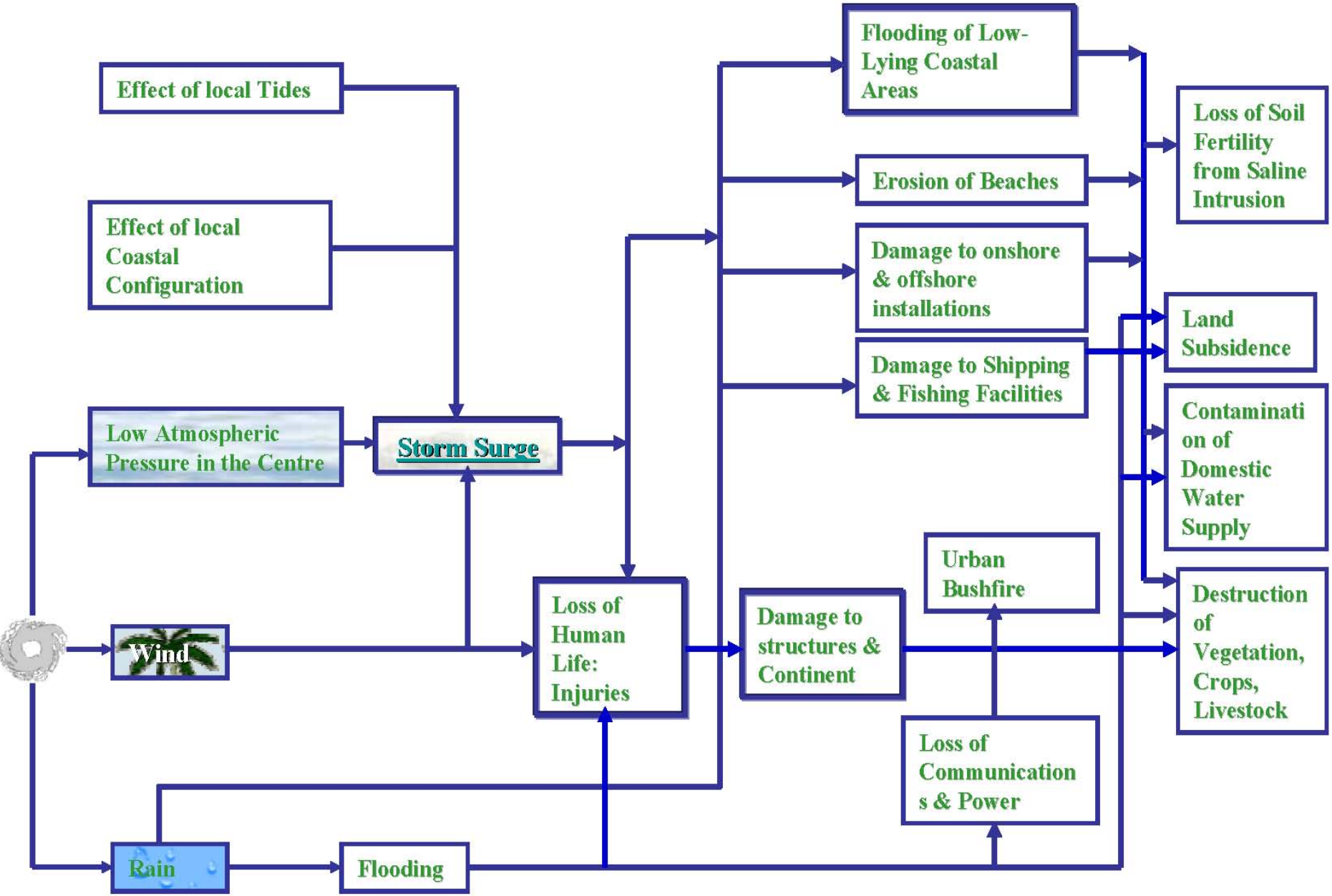
The Secretary of Agriculture and top agency officials receive updates at least every six hours based on NHC forecasts of track and intensity.

After a Storm Strikes: Agricultural Assessment



Observed track is mapped, along with NHC's tropical storm- and hurricane-force wind swaths.

NHC data sets are layered with key agricultural production areas.



Potential Impact upon Landfall of a Tropical Cyclone

Hurricanes

- The economic damage caused by Hurricane Katrina exceeded $133 billion, making this extreme event the most destructive natural disaster to affect the United States in its history (Lott et al., 2008).

- Ecosystems are impacted by land-falling hurricanes. Research estimated that Hurricane Katrina killed or severely damaged 320 million large trees across over two million hectares of forest in Mississippi, Louisiana and Alabama (Chambers et al., 2007).

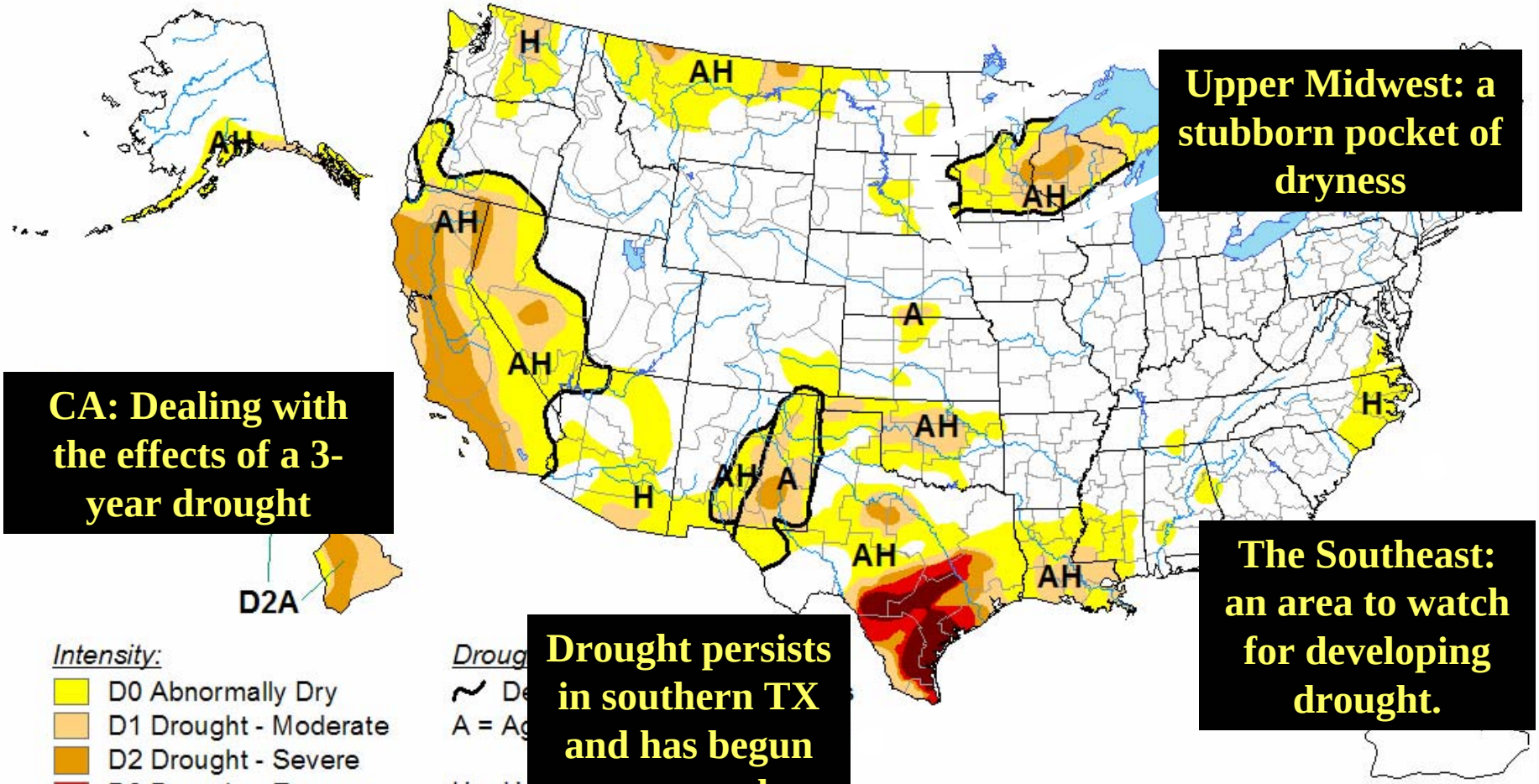
- Coastal fisheries (e.g. oyster beds, shrimp) and harvesting infrastructure (e.g. boats, processing and storage facilities) were also severely damaged by Katrina.

U.S. Drought Monitor

- A Blend of Science and Subjectivity
  - Integration of weather, climate and agrometeorological indices from several agencies
  - Numerical models
  - Input from regional and local experts
- Published Weekly
- Nine Authors
  - NDMC, USDA, CPC, NCDC
  - 2-3 week shifts as the product lead author
- Droughts are generally slow to emerge and recede
  - Classifications usually change one level per week

U.S. Drought Monitor

June 30, 2009
Valid 8 a.m. EDT



Upper Midwest: a stubborn pocket of dryness

CA: Dealing with the effects of a 3-year drought

Drought persists in southern TX and has begun to expand.

The Southeast: an area to watch for developing drought.

Intensity:
- D0 Abnormally Dry
- D1 Drought - Moderate
- D2 Drought - Severe
- D3 Drought - Extreme
- D4 Drought - Exceptional

Droug
~ De
A = Ag
H = Hy

The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. See accompanying text summary for forecast statements.

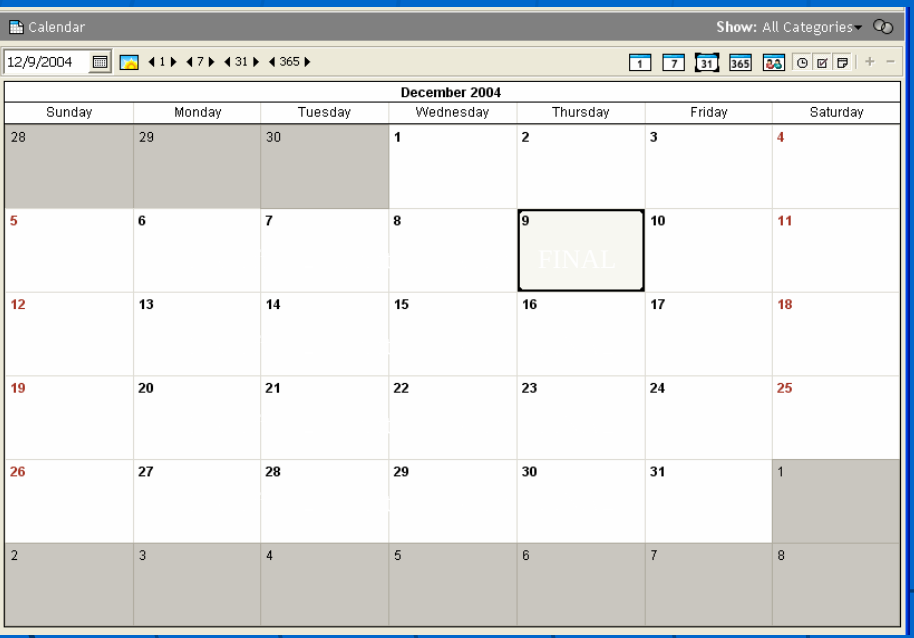
http://drought.unl.edu/dm

USDA National Drought Mitigation Center

Released Thursday, July 2, 2009
Author: Rich Tinker, CPC/NCEP/NWS/NOAA

GIS APPLICATIONS IN AGROMETEOROLOGY

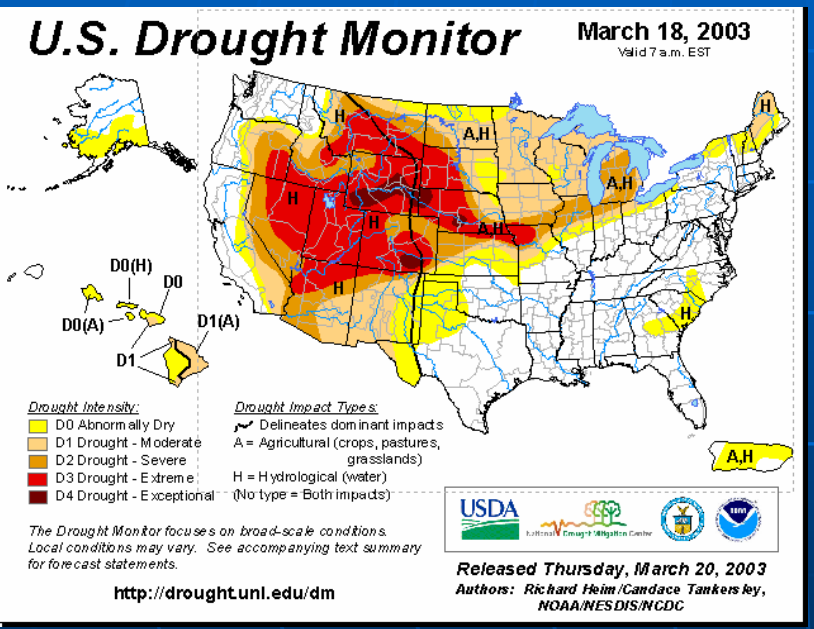
U.S. Drought Monitor - Methodology



- Each Monday, author consults data from numerous sources
  - quantitative observational networks
  - model output
  - satellite and radar imagery
  - subjective reports
- Author uses these data to prepare a first draft of the USDM for that week
- Draft distributed via email list-server to approximately 275 people, including fellow authors and climate and water experts from around the country.

GIS APPLICATIONS IN AGROMETEOROLOGY

U.S. Drought Monitor - Methodology



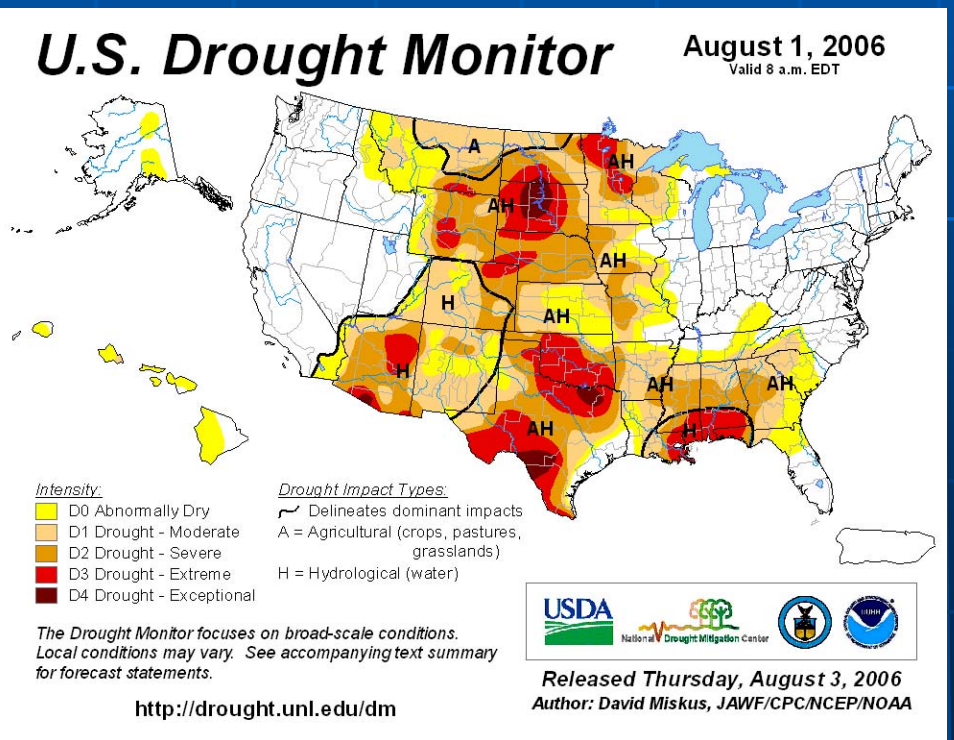
- Members of drought list provide author feedback, used to refine USDM
- Through iterative process, author prepares and distributes 2-3 drafts of the USDM during Monday, Tuesday, and Wednesday of each week to obtain the best product possible.
- Final product and an accompanying text summary posted every Thursday at 0830 LT on the USDM web site:

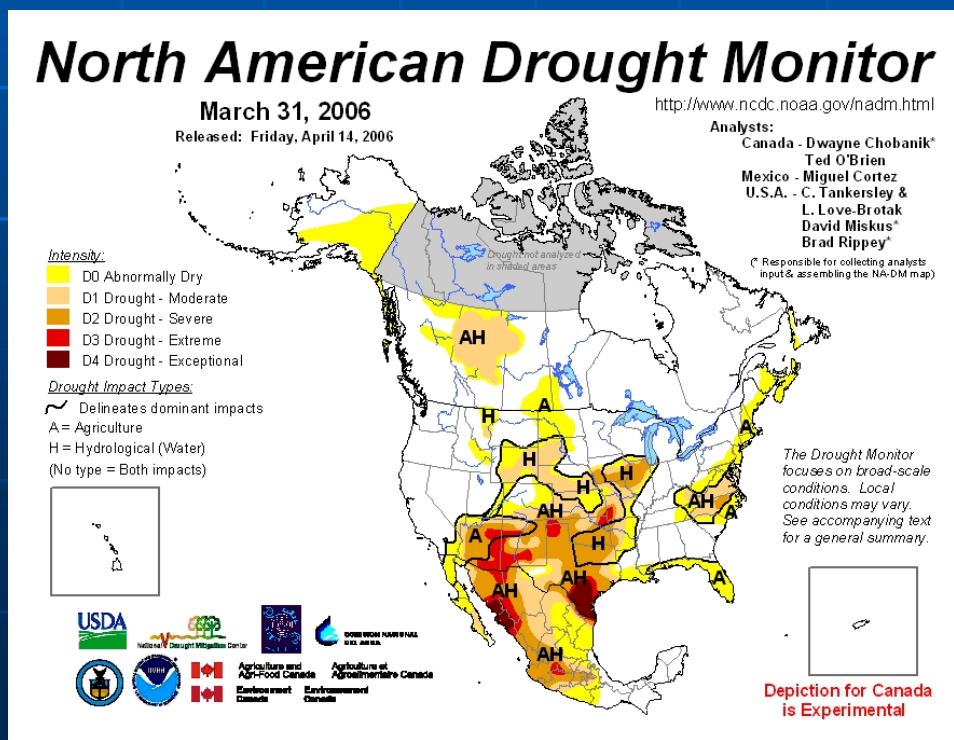
(http://www.drought.unl.edu/dm/monitor.html)

Drought Monitoring:
Coordinated Multi-Agency Activity
and Multi-Country Activity

Weekly

Monthly





What Inhibits your use of Weather and Climate Information ? (user survey)

- Timely access to comprehensive database.
- Availability of data in non-standard formats.
- The lack of unified weather and climate databases with software to create products necessary for agricultural decision makers.

➢ Solution: Establishment of an integrated and coordinated data system to provide the user communities with an efficient means of knowledge-based product retrieval.

An "Expert" is one who knows more and more about less and less until he knows absolutely everything about nothing

- Our field of agricultural meteorology is composed of diverse disciplines – meteorology, climatology, agronomy, crop physiology, & now IT based GIS and remote sensing is thrown to the "discipline pie"
- All of these resources must be utilized effectively and information processed efficiently for the user community to benefit from the wealth of expertise.
- A cooperative effort among experts can be a very effective means for the collaboration, preparation and dissemination of a quality advisory or bulletin – the JAWF example.
- The CAMI Project offers an opportunity for cooperation and coordination among nations, and pooling of resources.

Complex problems have simple, easy-to-understand wrong answers

- One good example for our application is the fact there are well known relationships between rainfall, temperature and crop yields. Weather extremes will impact crop yields, and historical analyses have led to quantifiable results.

- However, over longer periods of time, additional factors must be considered: technology changes introduced by seed hybrids and varietals, fertilizers and farm management practices.

- Thus, a well-prepared plan of action must be carefully developed and implemented to ensure meaningful and relevant information is made available to the users

One thing good about procrastination is that you always have something planned for tomorrow

- There is always room for improvement: new data source; new technological tool; new desktop publishing etc.
- Each new task should be well-thought out; procedures should be tested thoroughly before operational implementation; and encourage user feedback before and immediately after implementation. Inquires should be sent to the user community to offer suggestions for improvements – this promotes enhancements and opens channels of communication between the information provider and information user.
- Set out achievable tasks or demonstration projects; do not attempt to accomplish everything at once---a recipe for failure!

If everything seems to be going well, you have obviously overlooked something.

- From a newspaper cartoon: *employee*, " No problems this week, only issues, opportunities, challenges and valuable learning experiences"; *supervisor*, "Did you do any work"? *employee,* " It didn't seem necessary."

- Weather example: weather station reports reliably from an agricultural area for 30 years. However, a trend was occurring that was not documented by observers. Increasing population and urban growth significantly altered the cropping pattern to a more urbanized setting---maybe good data, but less relevant for agriculture over time!

- Plan, coordinate and liaison with all involved throughout the project, including the user community.

It's a simple task to make things complex, but a complex task to make them simple

- What are the objectives of any advisories or bulletins to farmers or policy-makers? Scientific information has to be tailored to be meet the needs of the user. The same information may need to be translated efficiently to different user groups at the same time. This is usually in terms of impending natural disasters or extreme events.

- Normally, farmers need timely daily information during the growing season to assist their on-going farm activities in the field; i.e., planting, spraying, fertilizer application etc. On a weekly basis, farm management may monitor irrigation scheduling, planning operations etc. Agribusiness and marketing decisions may be more interested in more longer-term weather and climate extremes.

- Key to success are appropriate input data on a routine basis. Then, providing user-friendly information that is easily understood and routinely available.

Caribbean Region Climate Monitor (CRCM)

- US Drought Monitor as a guide for input (USDM: PDSI, SPI, %Pcp, VHI, SMI etc,) develop a unique “CRCM”
- What are the weather and climate parameters that most affect agricultural economies of the region?

  -- How are they measured?

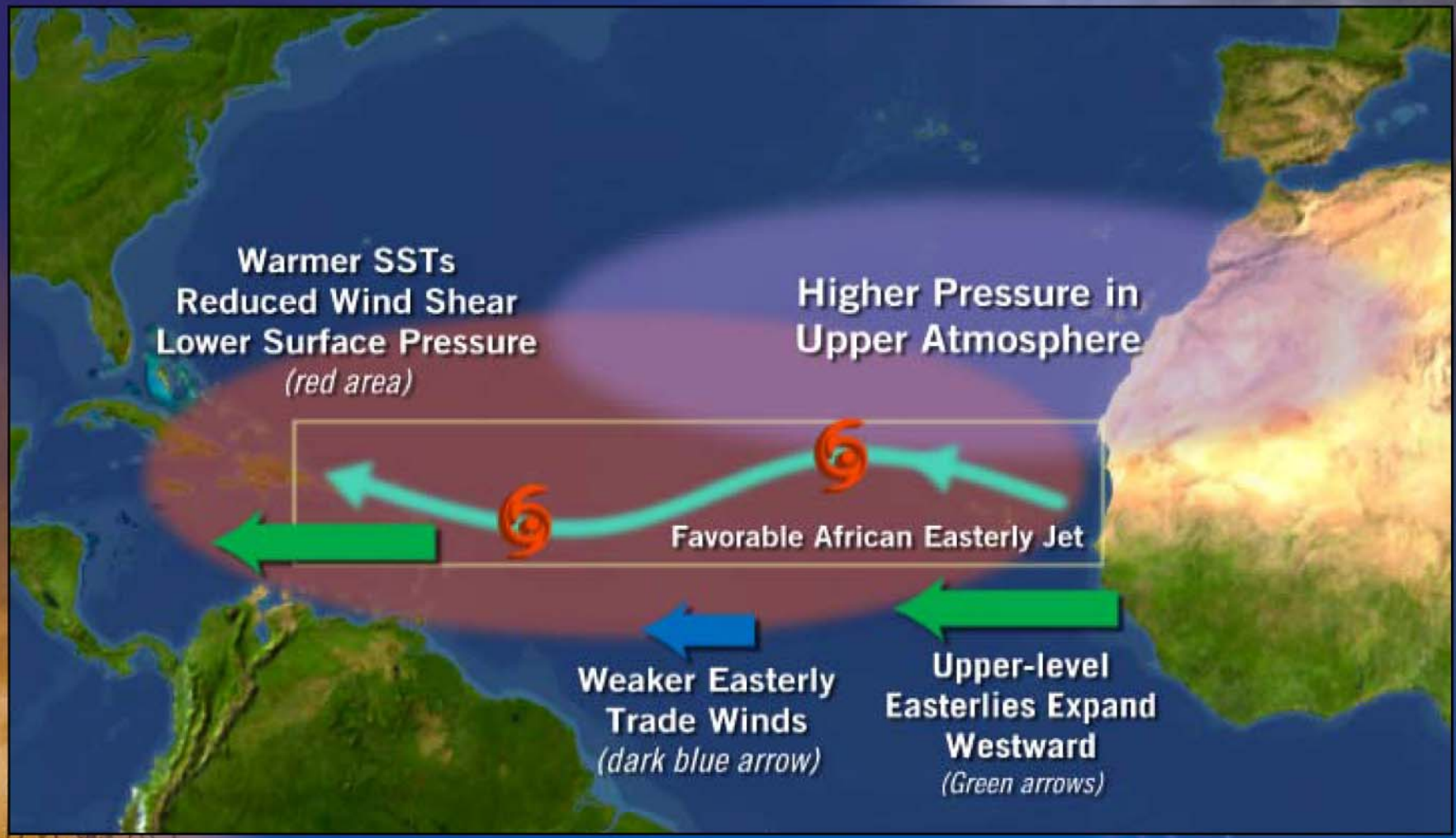
  -- Systematic observations or surveys (crop condition reports)

  -- USDM subjective observations serve valuable reporting **<u>if</u>** they are consistently reported from experts like yourselves.
- Key point must be emphasized: this must be a group effort from the very beginning and the commitment must be for the long-term

Caribbean Region Climate Monitor (CRCM)

- Some possible CRCM input factors to be considered:
  -- Predictor or index of onset of early-season rainfall
  -- El Nino/La Nina conditions
  -- Strength of prevailing winds (Index)
  -- Drought conditions
  -- Rainfall intensity (excessive rain/flooding/erosion etc)
  -- Hurricane season: strength of tropical storm
  -- Natural disaster impacts: how weather and climate extreme events are affecting crop developing, harvesting, marketing and, any potential options based on forecasts.
  -- As the evolves, mitigation and adaptation strategies could developed and implemented in a long-term plan

Expected Conditions During 2008 Atlantic Hurricane Season



Agroclimatic Risk Management Plan

- Preparedness to improve the effectiveness of response and recovery, such as establishing early-warning systems.
- Mitigation measures to reduce the impact of extreme events or natural disasters prior to their occurrence.
- Adaptation strategies to prepare for and minimize the potential impacts of climate variability and climate change.

Agroclimatic Risk Management Plan - Objectives

- Incorporates weather/climate, land surface and water interactions into the planning and management of agricultural production.

- Achieve a sustainable, optimized production level through the use of weather and climate information, while maintaining environmental integrity and minimizing the degradation of soil, nutrient and water resource bases.

- Technology (fertilizers, new seed varieties, farming practices) should aid production but not harm the resource base in the long term.

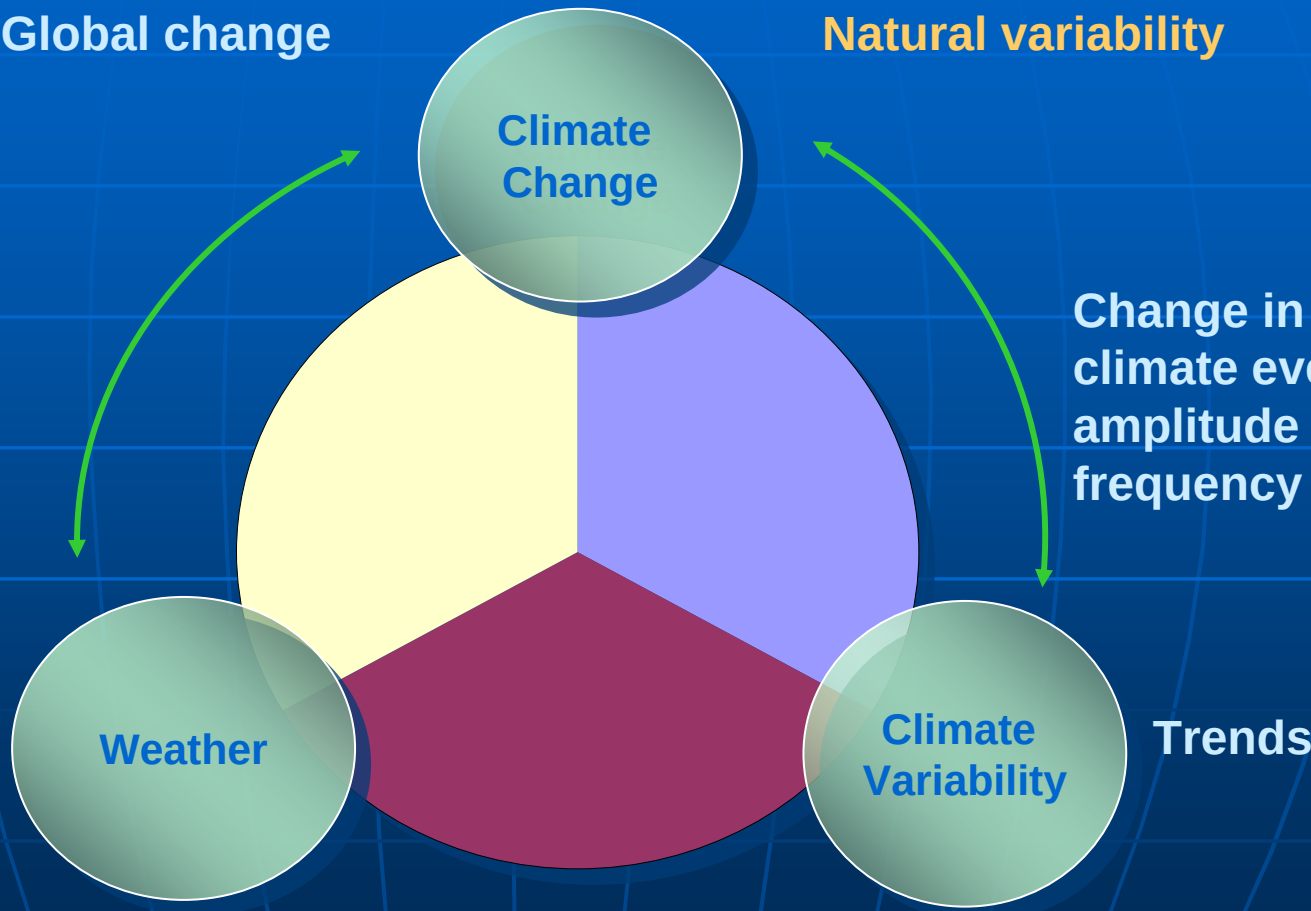
Caribbean Advisory/Bulletin

- Operational service to user community, providing data products/information useful to decision makers at the right time in the right format in a short concise format:

  -- How weather and climate affects **regional** agriculture;

  -- What are the risks caused by climate extremes on the **regional** agricultural economy;
- How can agricultural users benefit from weather forecasts (short-term decisions) and seasonal outlooks (long-range planning.
- Brief overview of regional conditions affecting agriculture (early alert status).
- Detailed summary resides in Country Weather & Climate Reports

Climate and Weather



Caribbean Advisory/Bulletin

- From the Caribbean region perspective, a standardized approach in the preparation of the bulletin format (i.e., similar format in text, map, and/or table format) would enhance the quality of the output for the entire user community.

- Then, for the development of specific applications and products, there could be coordinated effort between scientists and experts among different nations; thereby pooling resources for the best products for all.

  -- ex., irrigation scheduling technique could be tested, and if determined feasible for all nations, a single product could become operational in the bulletin and/or climate monitor.

Pest/Disease Risk Tool

- Set of tools to help farmers reduce risks associated with climate variability/extremes – recommendations for timing application of pesticides and fungicides.
- Select a station nearest to a farm:

-- Provide data & conditions for pest/disease level (similar to US Drought Monitor – no risk, low risk, moderate risk, high risk of pest or disease)

- Recommendation

-- Provide simple list of questions that should be coordinated with agricultural extension services and farmers about types of spray recommendations, based on stage of crop development, previous applications, and climate conditions.

Pest/Disease Risk Tool

- Develop simulation tools

  -- System modeling output presented in graphic and tabular format indicating risk levels listed above during the growing season, and including a forecast for the next few days first, and a seasonal outlook based on ENSO and other predictors.

- Develop an automated email system among providers and the user communities, with an appropriate feedback mechanism from the very beginning to ensure quality, reliability and trustworthiness in the products.

Pest/Disease Risk Tool

- Two key points to emphasize:

1. Start one step at a time. Start with a few stations and develop and test a prototype monitoring tool. Also, begin a dialogue with the agricultural extension service regarding a list of questions to go out the farming community etc.

2. The effort must be integrated and coordinated by all nations. It does require a major commitment for everyone to agree to pool their resources. This is particularly true if IT resources are compatible. If not, it could be a little more complicated to overcome.

Caribbean Advisory/Bulletin

- “WAMIS Concept” for the Caribbean Bulletin.
- Each country prepares its own bulletin in a timely manner for its release internally for decision makers and the agricultural user communities for early alerts, management decisions and planning, and is used in-country as needed.
- Then, a standardized version is forwarded to a regional host server for archival and back-up and to serve as a regional agrometeorological information center for regional R&D studies.

JAWF WEBSITE

- http://www.usda.gov/oce/weather/pubs/index.htm
- Website for information on all JAWF weather and climate products, including daily, weekly and monthly reports, and U.S. Drought Monitor and North American Drought Monitor

Thank You