FAS – Office of Global Analysis (OGA)
United States Department of Agriculture (USDA)
International Operational Agriculture Monitoring Program

USDA Foreign Agricultural Service

Iran: Crop Progress Report

MY 2010/11

January Summary **January 29, 2009**

(1) Weather and crop conditions during the current MY 2010/11 winter grain season for Iran have been extremely favorable to-date and indicate the potential for a return to normal production levels after two years of drought-affected harvests. Particularly positive signs of crop development are occurring in the northwestern rainfed grain-producing provinces of the country, which collectively account for over 50% of Iran's winter grain (wheat and barley) production. It is important to note, however, that it is still very early in the crop cycle and the current situation could potentially change in coming months should rainfall and temperature conditions significantly worsen.

(2) Precipitation over Iran was very favorable during the planting months of November and December over almost all major grain production areas, with better than normal rainfall occurring over the primarily rainfed provinces in the northwest as well as over two major provinces in the southwest (Khuzestan and Fars) that had experienced a sustained two-year drought and seriously depleted irrigation supplies (Figure 1). Rainfall conditions, however, worsened in January when crops were largely dormant, with well below normal precipitation levels occurring country wide (Figure 2). Wheat and barley typically undergo a period of dormancy from late December through early February during the colder winter months after which available water supplies, either through rainfall or irrigation sources, will be especially important to facilitate crop growth. The low precipitation levels experienced in January are not expected to have a significant effect on Iran's grain production potential, unless low rainfall and above normal temperature conditions prevail in future months. In addition to lower than normal rainfall, Iran experienced unseasonably warm weather over the past 30 days (Figure 3).

(3) Satellite derived vegetation index (NDVI) data analysis comparing current crop conditions against the 6-year average show that the majority of croplands in northwestern Iran have benefited from the ideal early rainfall conditions and have better vegetative development than normal. This region normally accounts for 51 percent of national winter grain production, and this is a strong signal that national grain output has the chance to rebound dramatically this year. Khuzestan province, in particular, is experiencing better than normal crop vegetation development (8% of total national wheat production and 4% barley), after having suffered a substantial drop in production during MY 2009/10 due to sustained drought (Figure 8). By comparison, important areas currently displaying slightly below normal crop vegetative development are the major irrigated provinces of Fars (8% of total national wheat and 7% of barley) and Khoresan in the northeast (13% wheat and 20% barley). It is important to note when analyzing NDVI change that it is still relatively early in the grains season, in the

FAS-Office of Global Analysis USDA

post-emergence crop dormancy phase, so current conditions are not strict indicators of crop potential. True evidence of crop condition through satellite derived NDVI typically becomes apparent during the months of February and March (Figure 4). Figures 9 – 11 show the NDVI comparison of current vegetation conditions against the previous grain growing season (MY 2009/10) which included drought-related reductions in wheat and barley production over some important crop areas. As of January 2009, the beginning of MY 2009/10 crop season, much of Iran was coming out of a year-long drought which resulted in unusually low early-season NDVI values over grain areas. Current conditions for early-season NDVI show that 84 percent of agricultural areas have reached or exceeded 2009 growing season conditions, with significant increases in vegetation in Khuzestan province in the southwest.

(4) High resolution satellite imagery collected over Golestan province in northwest Iran corroborates the conditions portrayed by the vegetative index data (NDVI). Current conditions at the field level show an increase both in planted area of winter grains as well as relative abundance and vigor of crop growth within the fields this year (Figure 12). Average temperatures, high available rainfall, and good soil moisture during November and December provided ideal early growing conditions during the current MY 2010/11 season. This is substantially different than at this time last year.

(5) Monitoring of winter snow pack conditions is important to crop assessments in Iran because snow cover has two important roles in winter grains production. First, and most importantly, snow accumulation over agricultural fields as well in Iran's higher mountain ranges provide an important source of ground water for crop growth and aquifer recharge during spring snow melt. Secondly snow cover over grain fields helps cover and protect emerged grain seedlings from extreme low temperatures during the coldest months of the winter dormancy period. Snow cover and snow depth in Iran as of mid-January 2010 was well-below normal in both areal coverage and depth (Figure 13), which can have significant effect on water availability for crop growth in the coming months. Late December through January are typically the coldest months in Iran, when significant increases in winter snow pack generally occurs. This year the combination of low January precipitation and well above normal temperatures have resulted in a loss of snow cover from the previous month. Winter snow pack generally reaches its peak by early February.

(6) The NOAA Climate Prediction Center 7-day rainfall forecast suggests increased incidence of precipitation over all the major grain production areas in Iran, with the highest accumulations occurring over the Zargos mountain range, perhaps increasing current snowpack (Figure 14).

FAS-Office of Global Analysis
USDA

FAS – Office of Global Analysis (OGA)
United States Department of Agriculture (USDA)
International Operational Agriculture Monitoring Program

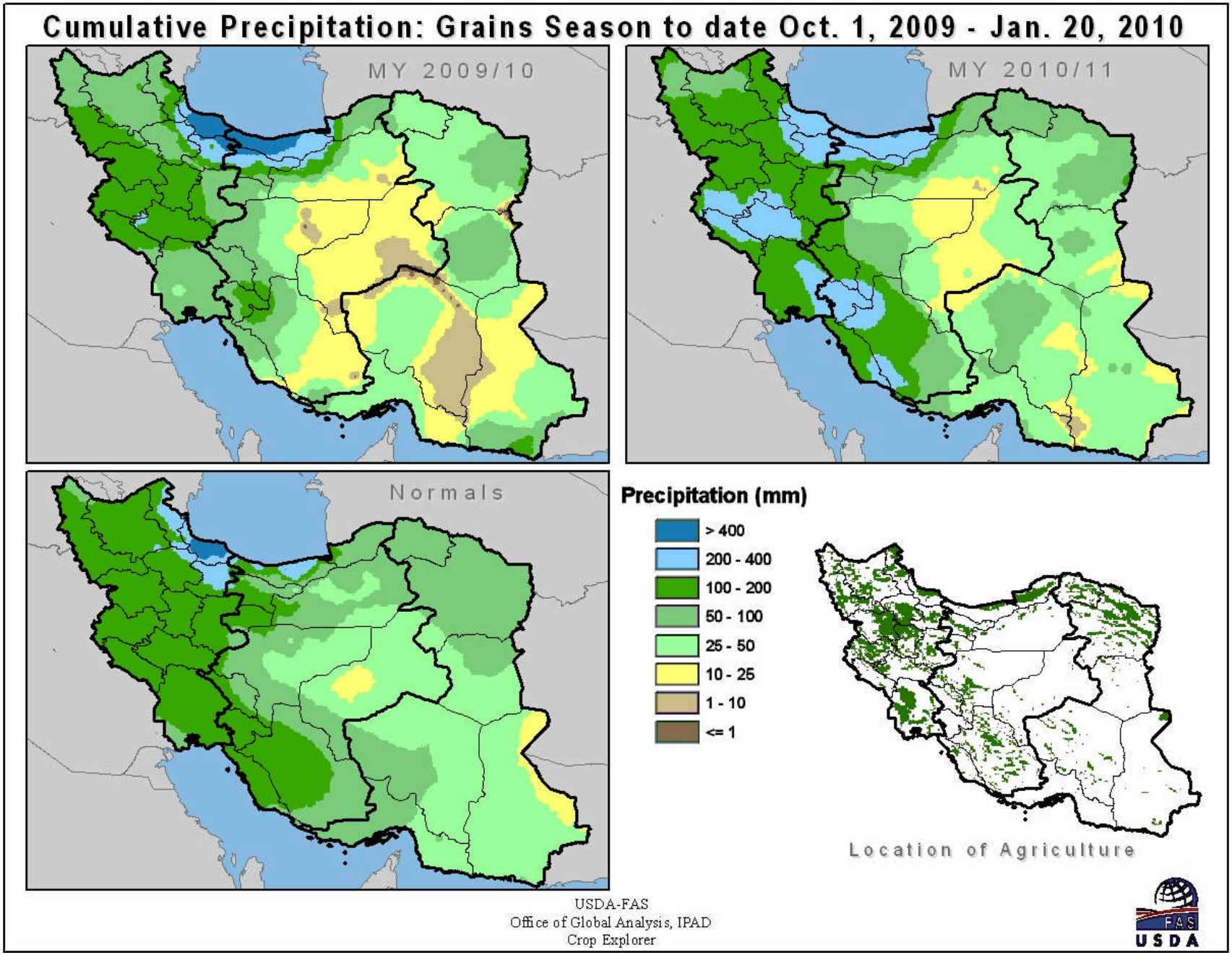


Figure 1. Season to date cumulative precipitation showing current year (MY 2010/11) compared against the previous years and precipitation normals.

FAS-Office of Global Analysis
USDA

FAS – Office of Global Analysis (OGA)
United States Department of Agriculture (USDA)
International Operational Agriculture Monitoring Program

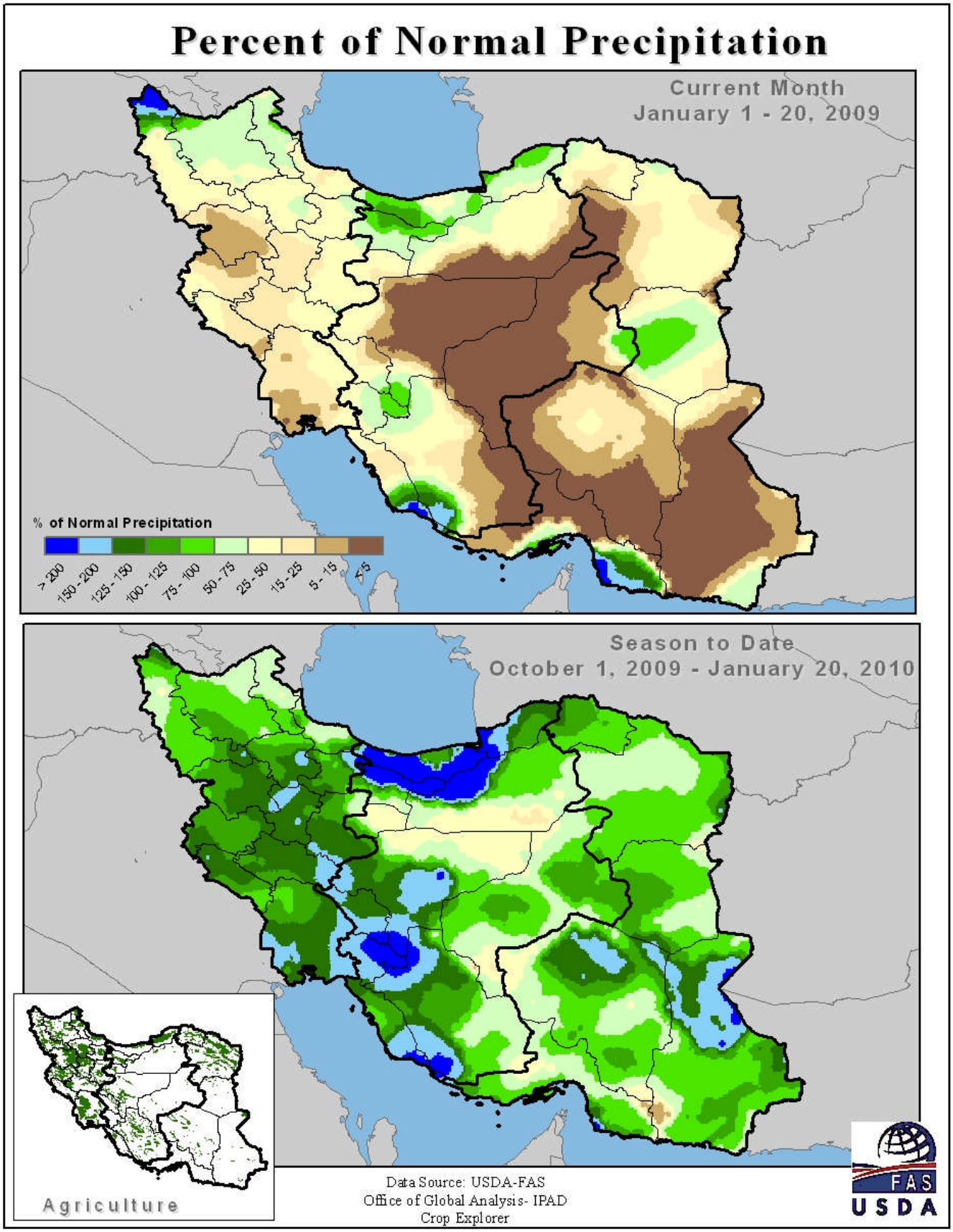


Figure 2. Percent of normal precipitation showing the current month and winter grains season to date.

FAS-Office of Global Analysis
USDA

FAS – Office of Global Analysis (OGA)
United States Department of Agriculture (USDA)
International Operational Agriculture Monitoring Program

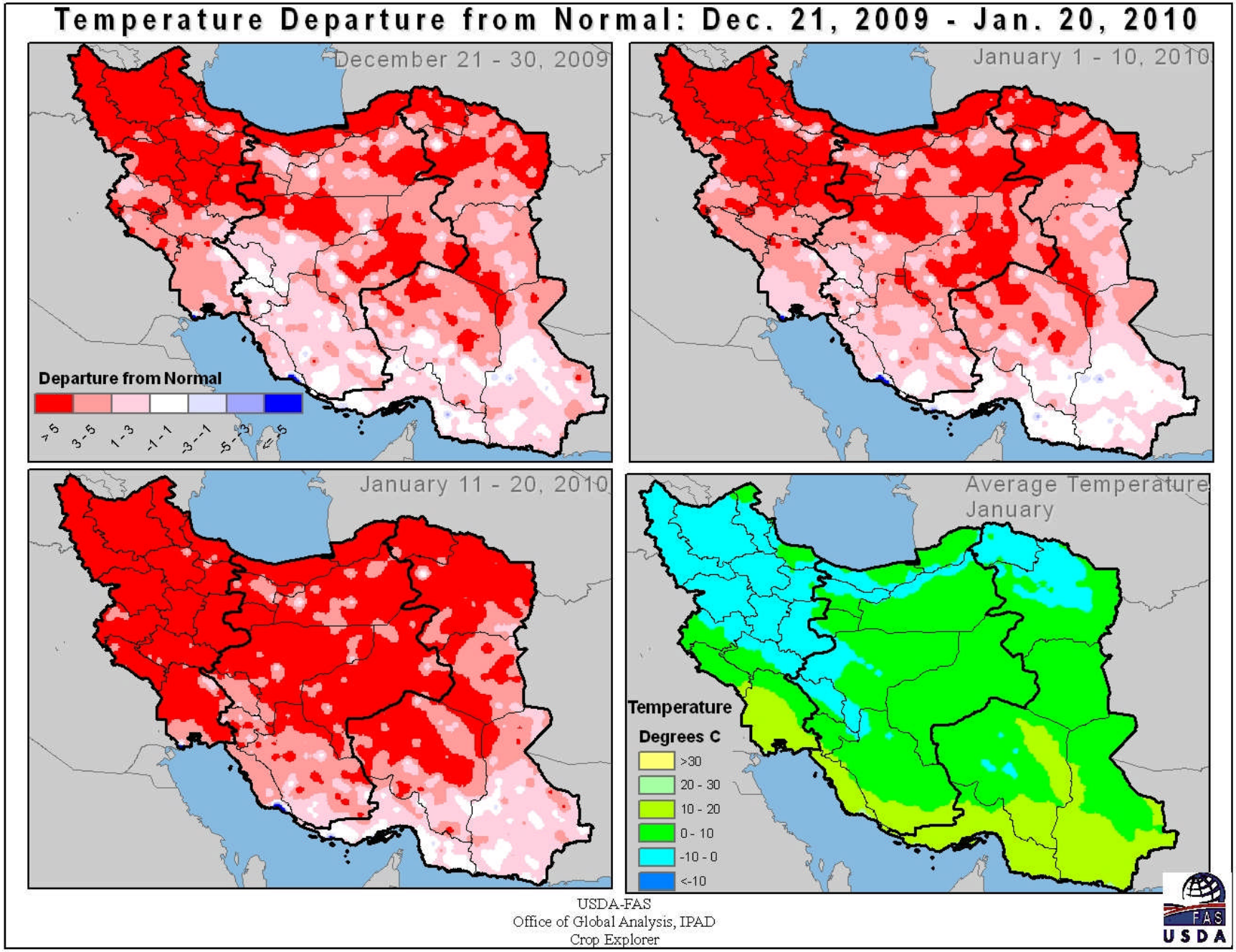
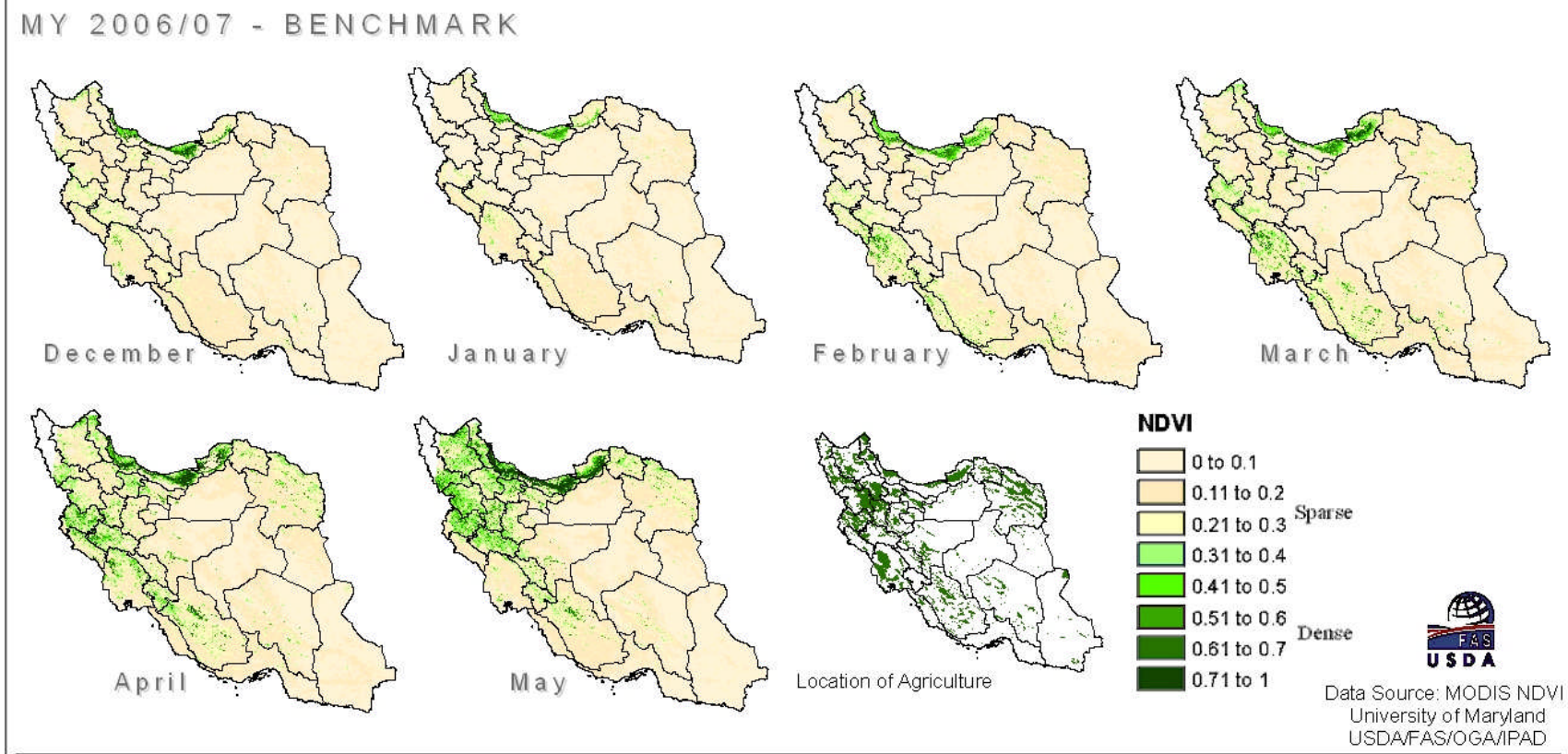


Figure 3. Decadal temperature departure from normal from December 20, 2009 to January 20, 2010.

FAS-Office of Global Analysis
USDA

MODIS NDVI Time Series: MY 2010/11 vs. MY 2006/07 Benchmark



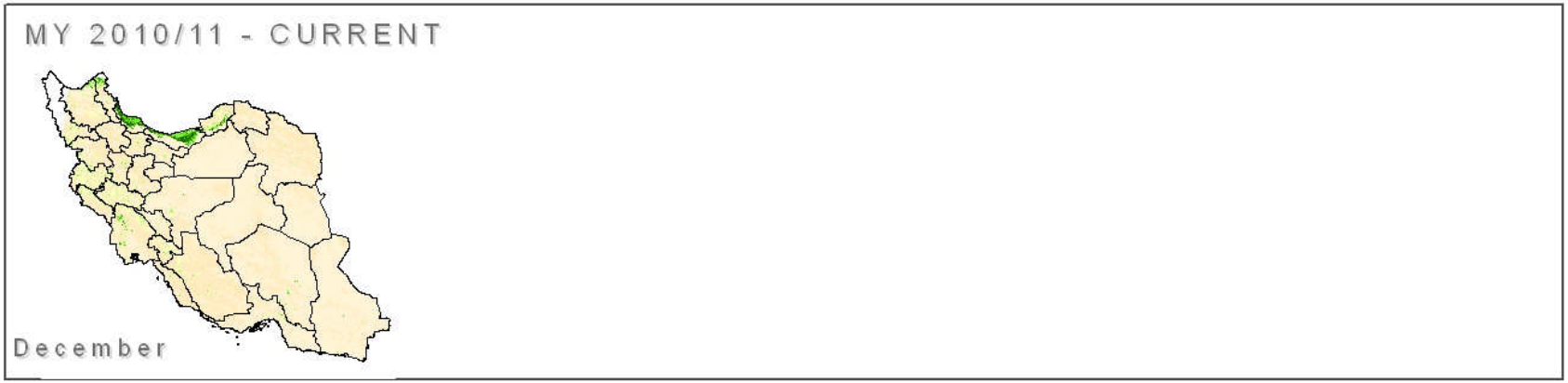
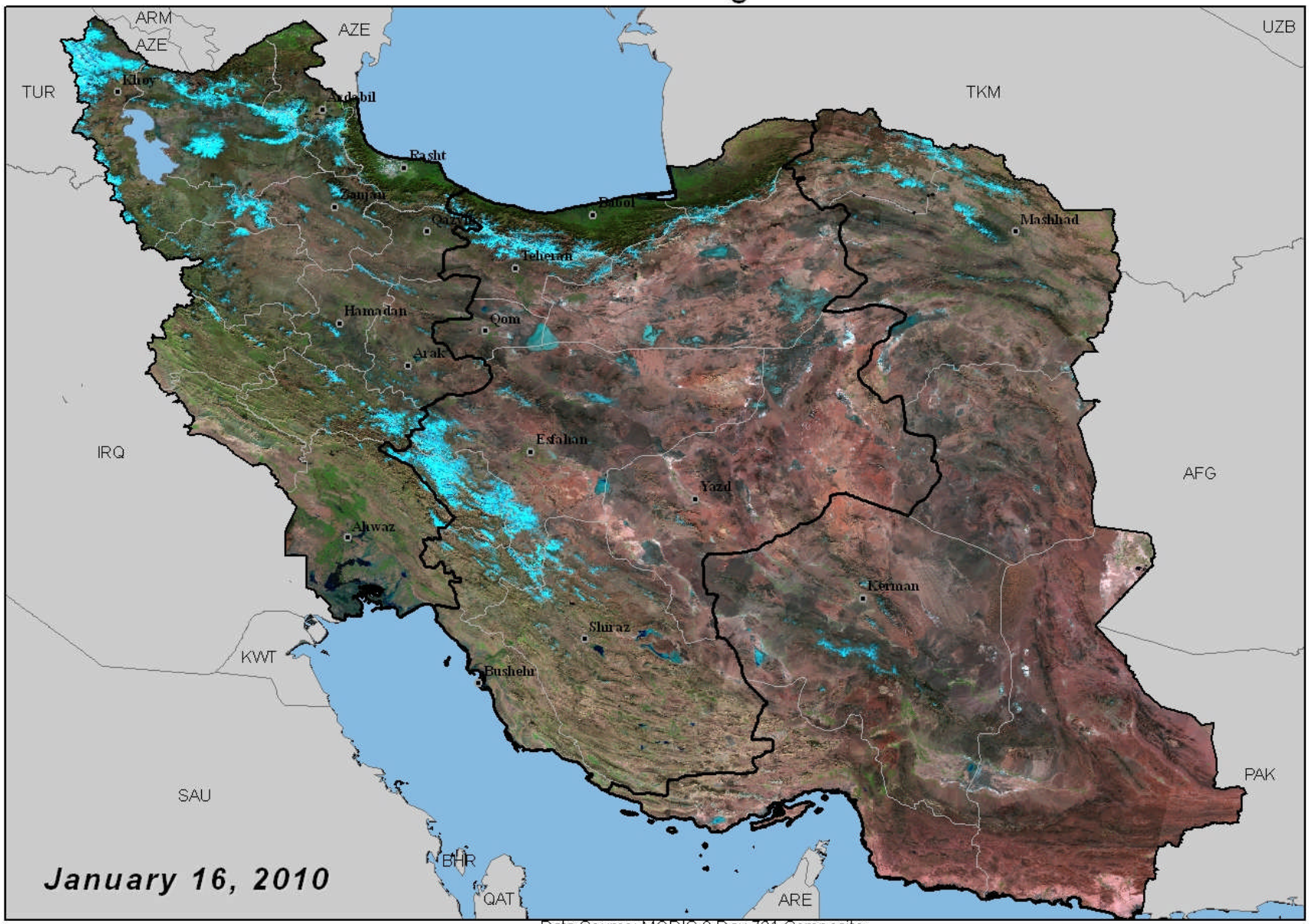


Figure 4. MODIS NDVI images over the winter grains season comparing MY 2006/07 benchmark grain production year to the current season.

FAS-Office of Global Analysis
USDA

FAS – Office of Global Analysis (OGA)
United States Department of Agriculture (USDA)
International Operational Agriculture Monitoring Program

MODIS 721 False-Color Image: MY 2010/11



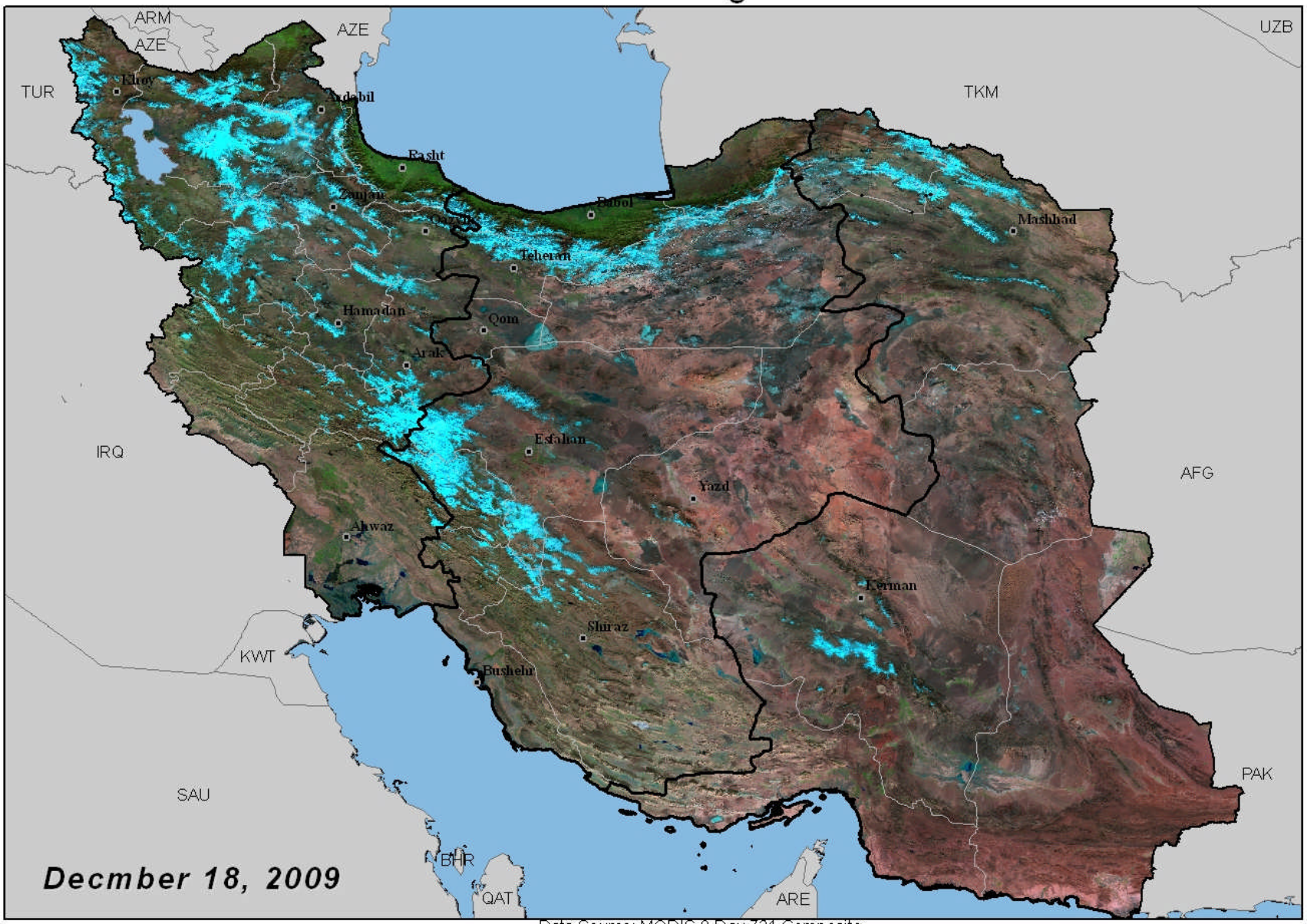
Data Source: MODIS 8-Day 721 Composite
Data Provided by USGS EROS Data Center/ NASA Goddard
Supporting: USDA/FAS/OGA/IPAD

Figure 5. MODIS false color, cloud free composite over Iran for the current month, January 8-16, 2010.

FAS-Office of Global Analysis
USDA

FAS – Office of Global Analysis (OGA)
United States Department of Agriculture (USDA)
International Operational Agriculture Monitoring Program

MODIS 721 False-Color Image: MY 2010/11



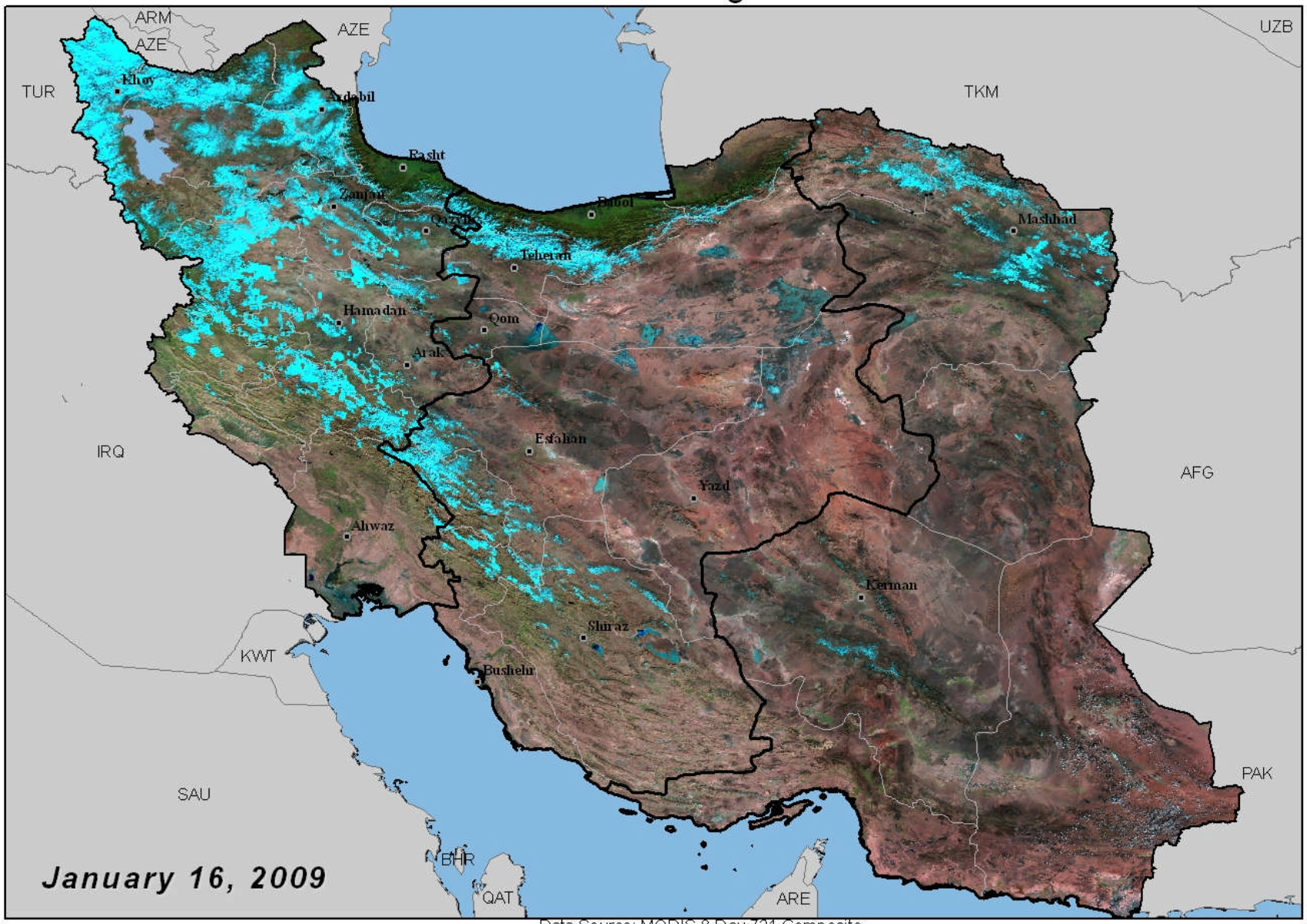
Data Source: MODIS 8-Day 721 Composite
Data Provided by USGS EROS Data Center/ NASA Goddard
Supporting: USDA/FAS/OGA/IPAD

Figure 6. MODIS false color, cloud free composite over Iran for the previous month, December 10-18, 2009.

FAS-Office of Global Analysis
USDA

FAS – Office of Global Analysis (OGA)
United States Department of Agriculture (USDA)
International Operational Agriculture Monitoring Program

MODIS 721 False-Color Image: MY 2009/10



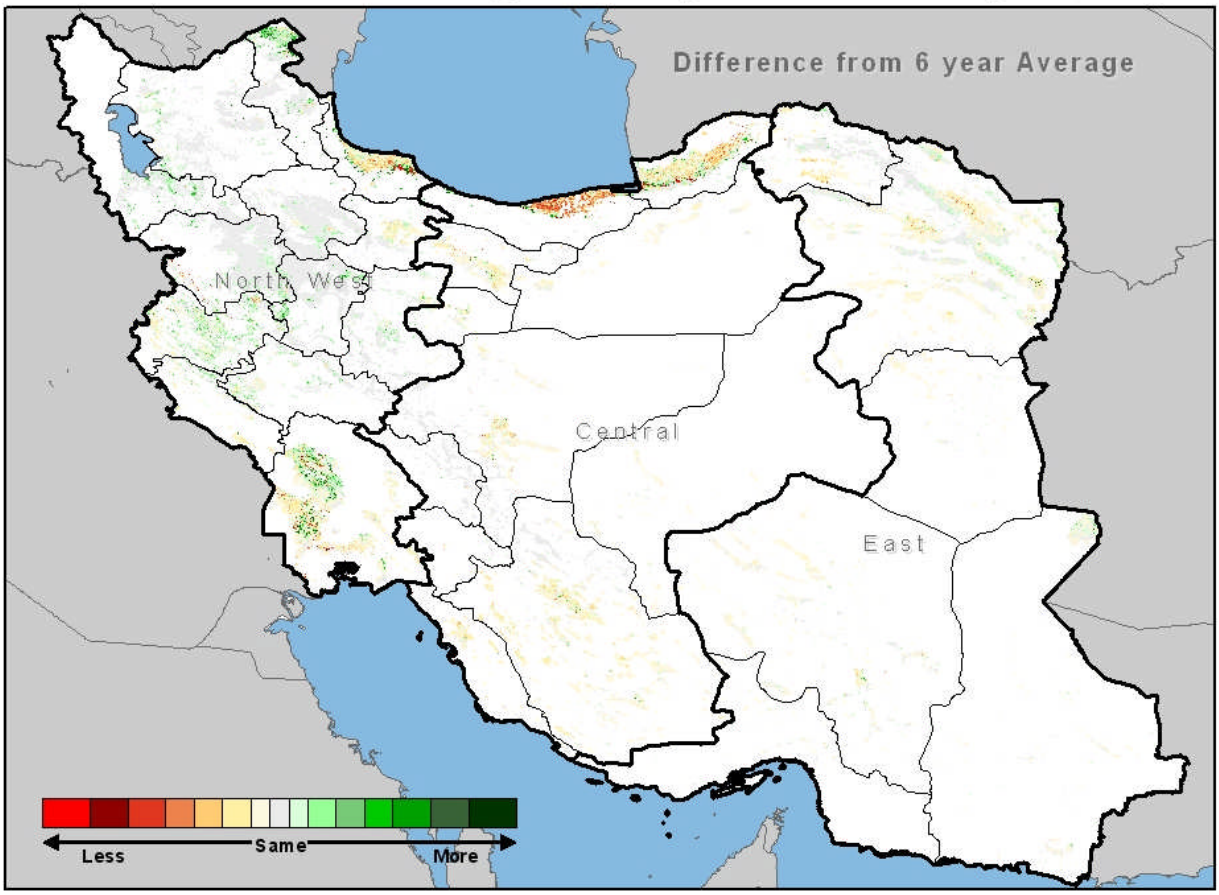
Data Source: MODIS 8-Day 721 Composite
Data Provided by USGS EROS Data Center/ NASA Goddard
Supporting: USDA/FAS/OGA/IPAD

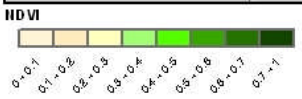
Figure 7. MODIS false color, cloud free composite over Iran for the current month, last year, January 8-16, 2009.

FAS-Office of Global Analysis
USDA

FAS – Office of Global Analysis (OGA)
United States Department of Agriculture (USDA)
International Operational Agriculture Monitoring Program

MODIS NDVI Change Analysis: January 3, 2010





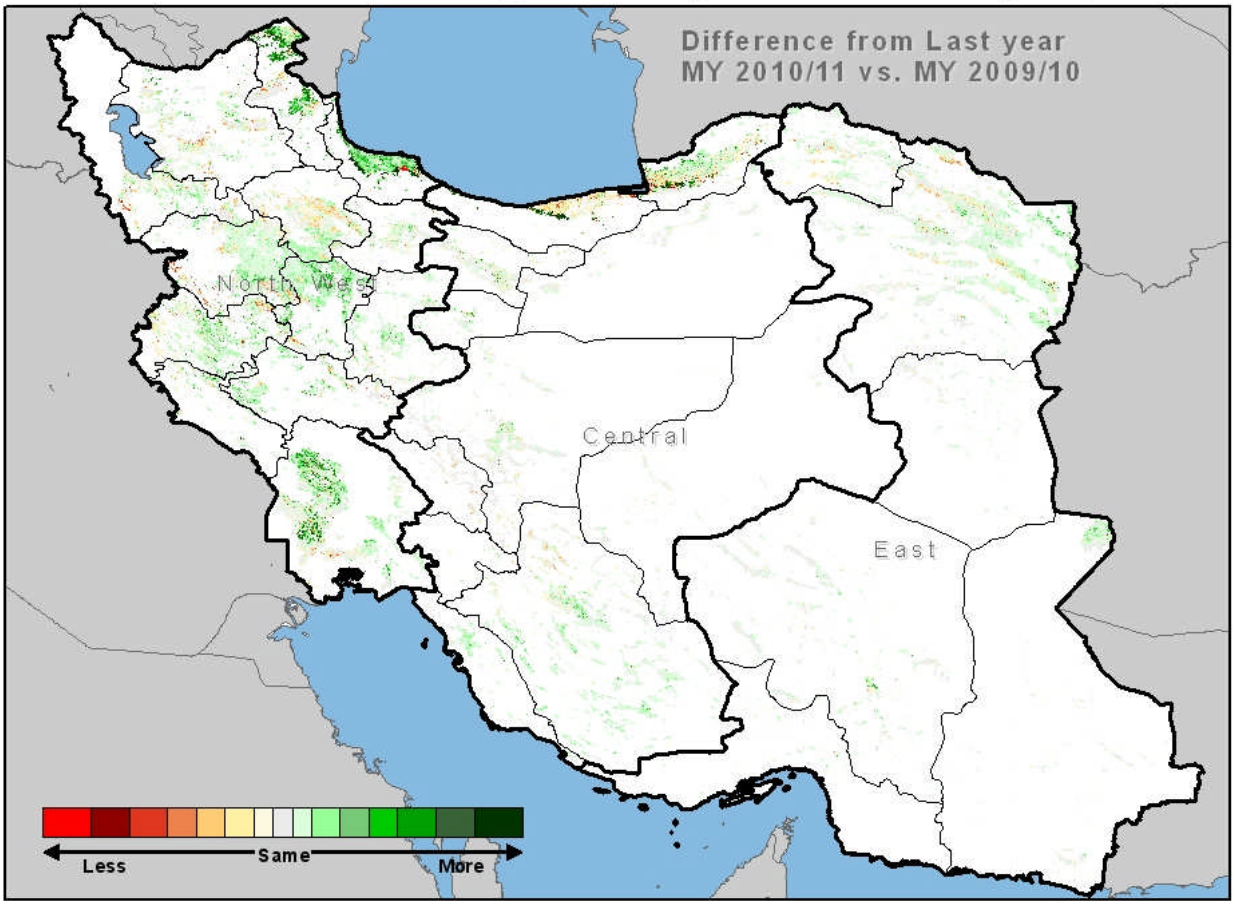
Data Source: MODIS NDVI 250-m, University of Maryland
USDA-FAS, Office of Global Analysis, IPAD
Crop Explorer

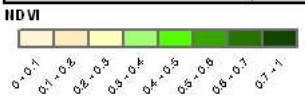
Figure 8. MODIS NDVI change comparing current MY 2010/11 NDVI against the previous 6-year average.

FAS-Office of Global Analysis
USDA

FAS – Office of Global Analysis (OGA)
United States Department of Agriculture (USDA)
International Operational Agriculture Monitoring Program

MODIS NDVI Change Analysis: January 3, 2010





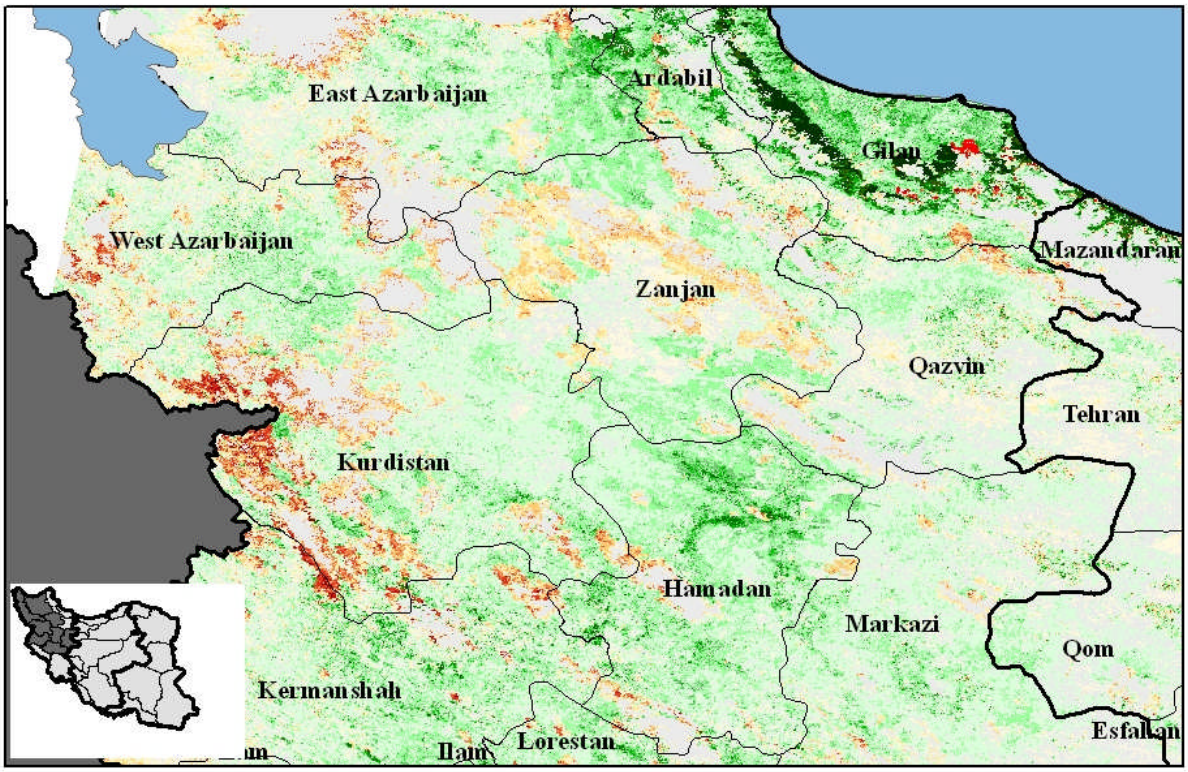
Data Source: MODIS NDVI 250-m, University of Maryland
USDA-FAS, Office of Global Analysis, IPAD
Crop Explorer

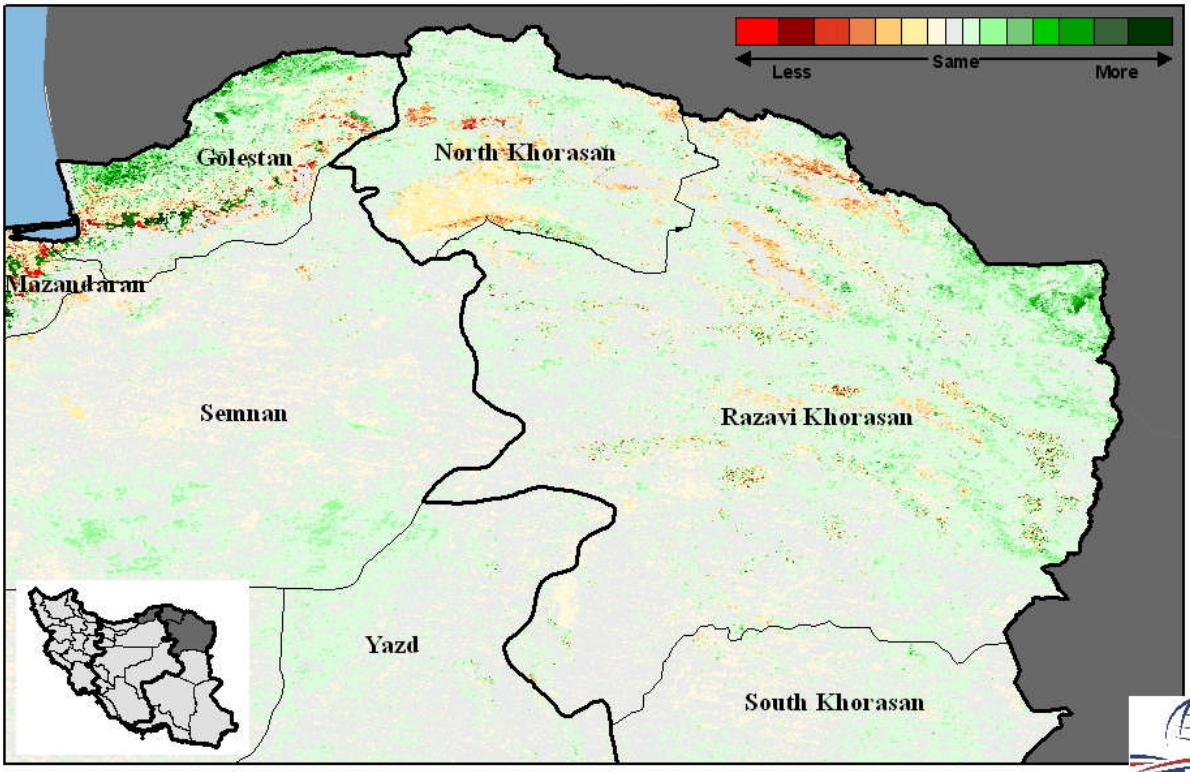
Figure 9. MODIS NDVI change comparing current MY 2010/11 NDVI against the previous year (MY 2009/10).

FAS-Office of Global Analysis
USDA

FAS – Office of Global Analysis (OGA)
United States Department of Agriculture (USDA)
International Operational Agriculture Monitoring Program

MODIS NDVI Change: MY 2010/11 vs. MY 2009/10





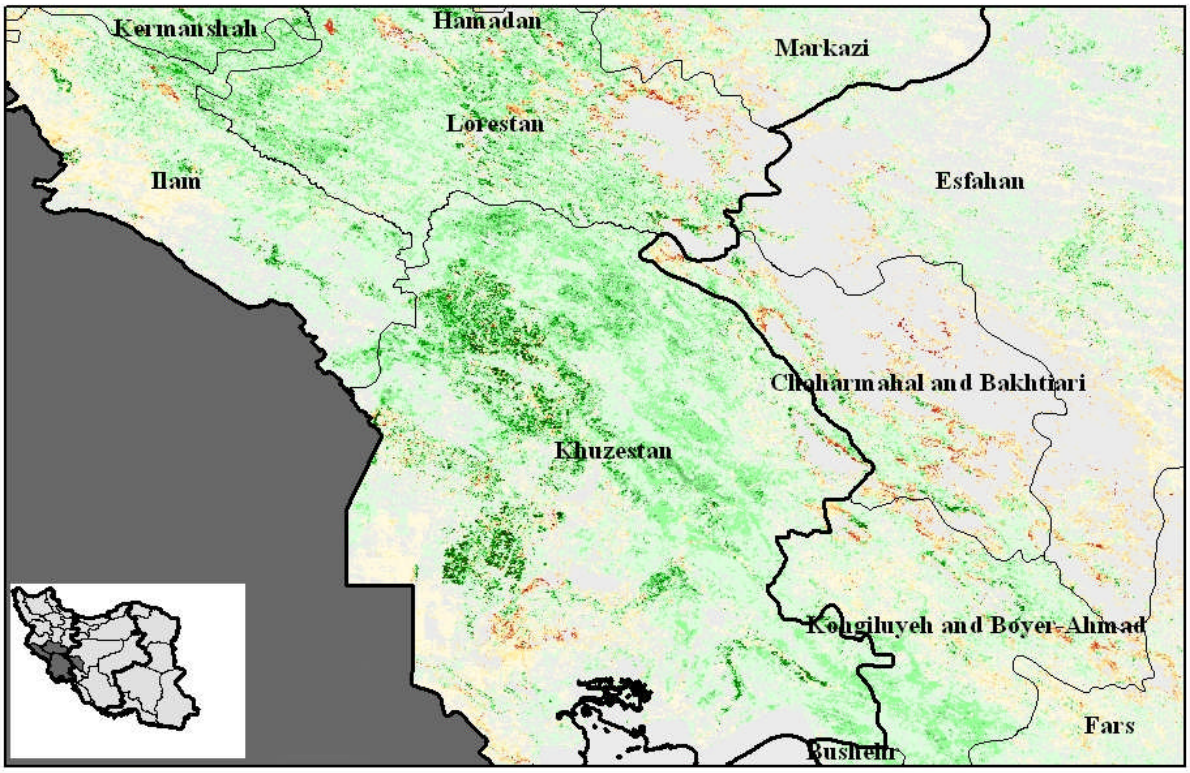
Data Source: MODIS 250m NDVI
USDA-FAS, Office of Global Analysis

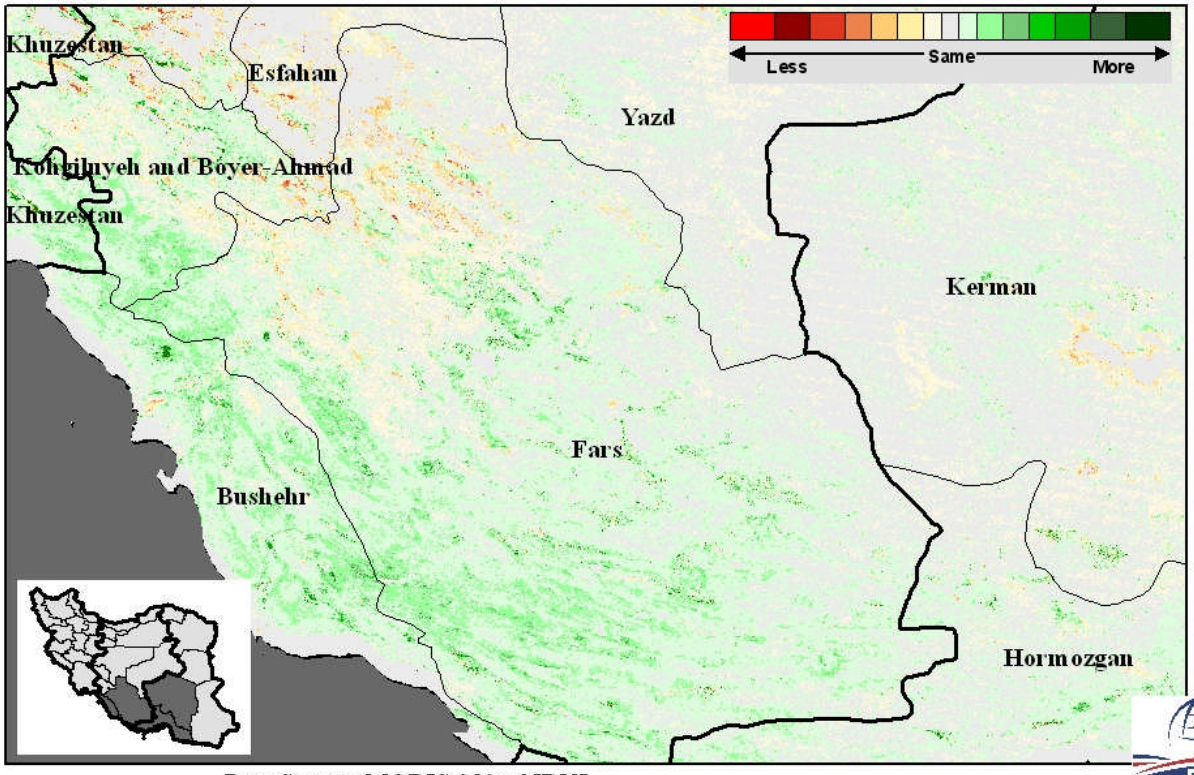
Figure 10. MODIS NDVI change comparing current MY 2010/11 NDVI against the previous year (MY 2009/10) over major grain production provinces in northwest and northeast Iran.

FAS-Office of Global Analysis
USDA

FAS – Office of Global Analysis (OGA)
United States Department of Agriculture (USDA)
International Operational Agriculture Monitoring Program

MODIS NDVI Change: MY 2010/11 vs. MY 2009/10





Data Source: MODIS 250m NDVI
USDA-FAS, Office of Global Analysis

Figure 11. MODIS NDVI change comparing current MY 2010/11 NDVI against the previous year (MY 2009/10) over major grain production provinces in southwest Iran.

FAS-Office of Global Analysis
USDA

FAS – Office of Global Analysis (OGA)
United States Department of Agriculture (USDA)
International Operational Agriculture Monitoring Program

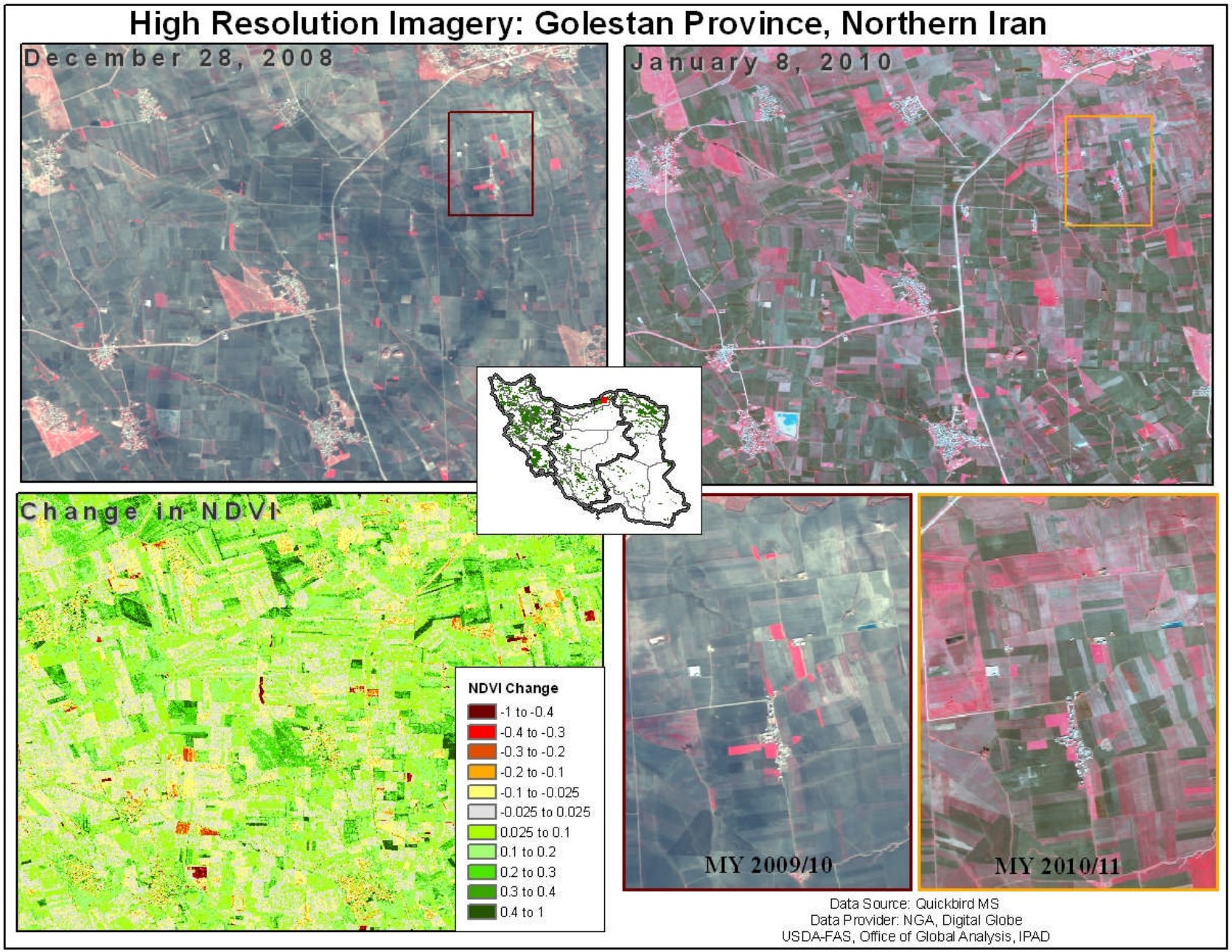


Figure 12. High resolution Quickbird imagery from January 8, 2010 compared against imagery from a similar period from the previous grains season. Golestan Province, Iran.

FAS-Office of Global Analysis
USDA

FAS – Office of Global Analysis (OGA)
United States Department of Agriculture (USDA)
International Operational Agriculture Monitoring Program

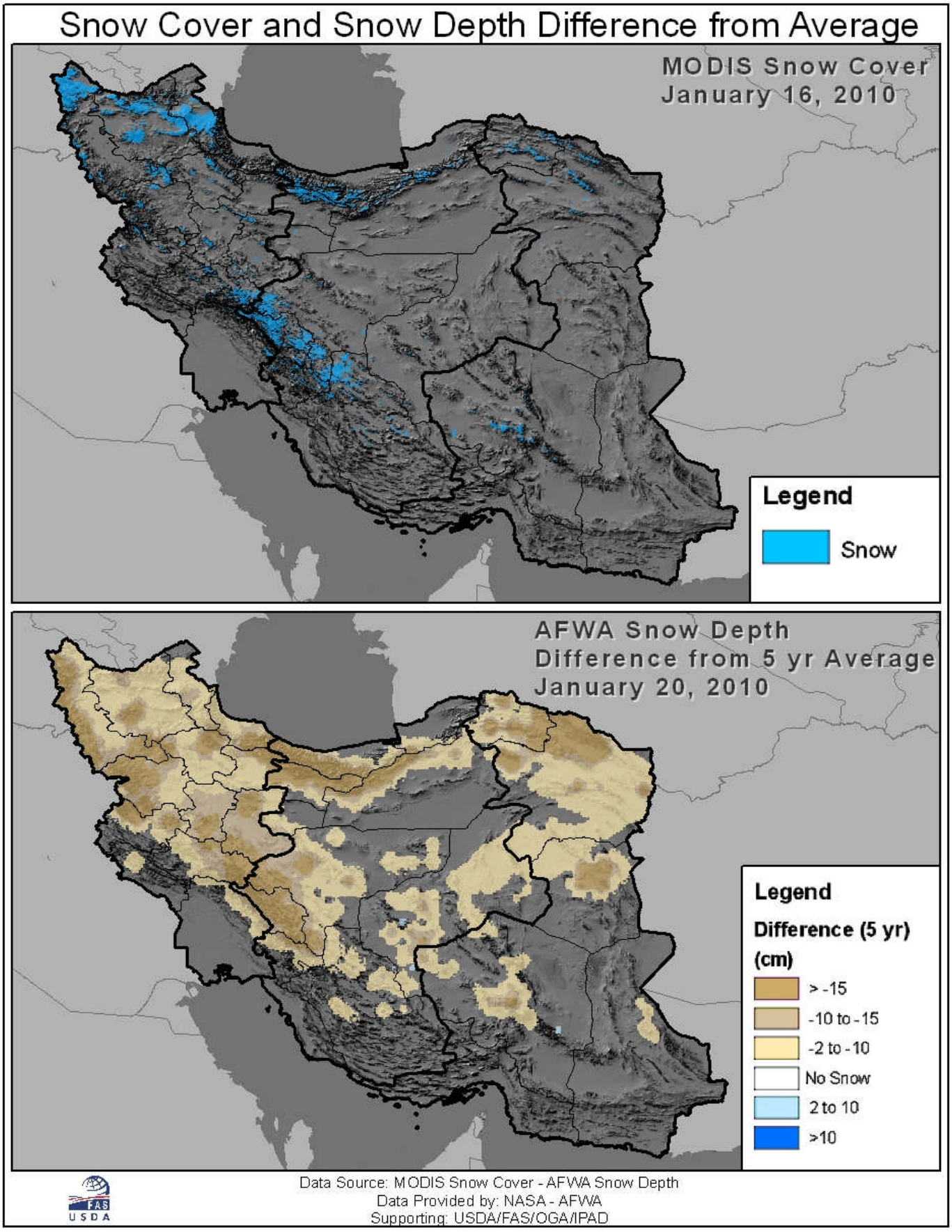
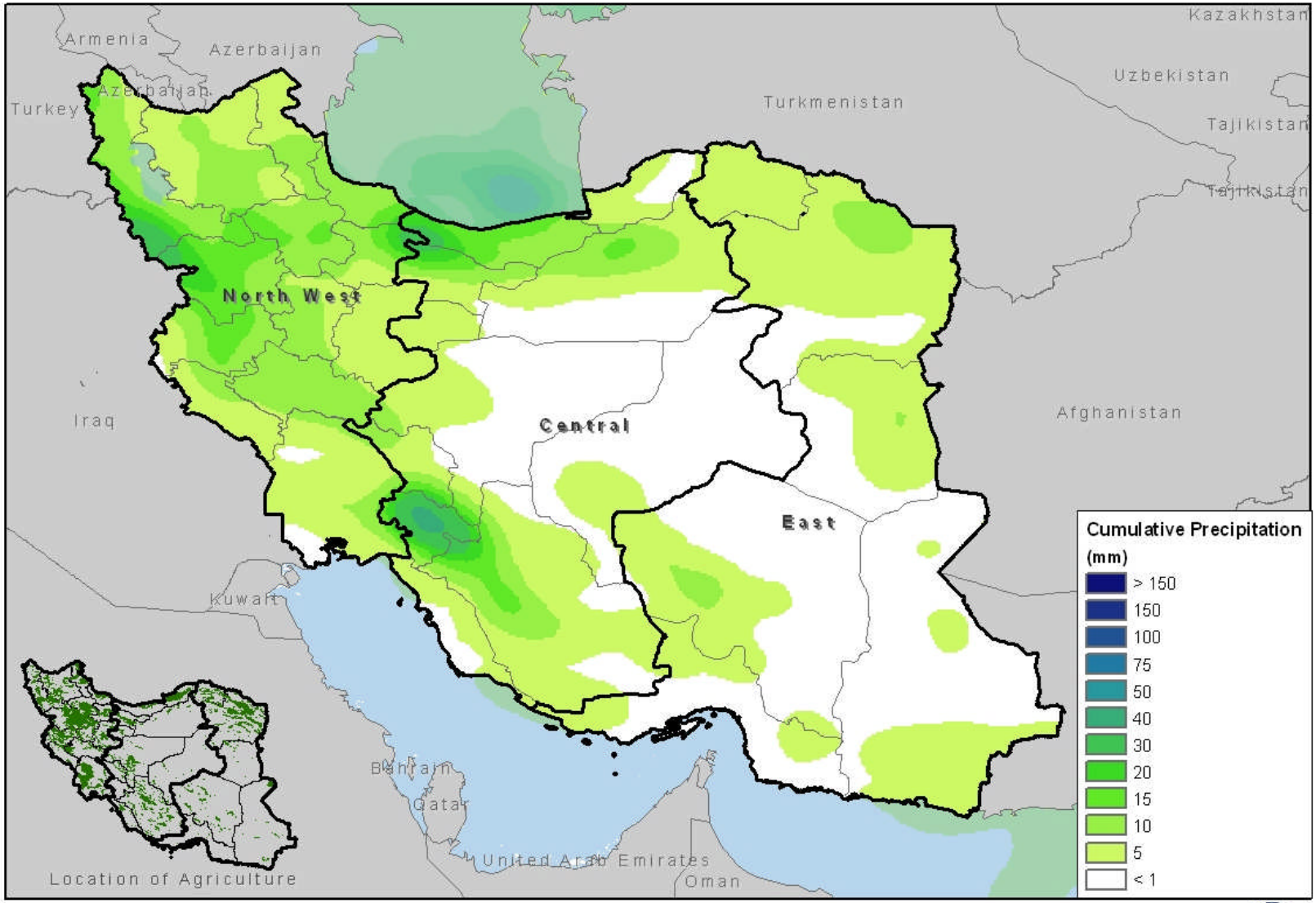


Figure 13. MODIS snow cover and AFWA snow depth comparison to the 5 year average.

FAS-Office of Global Analysis
USDA

FAS – Office of Global Analysis (OGA)
United States Department of Agriculture (USDA)
International Operational Agriculture Monitoring Program

7-Day Precipitation Outlook: January 27 - Febraury 3, 2010

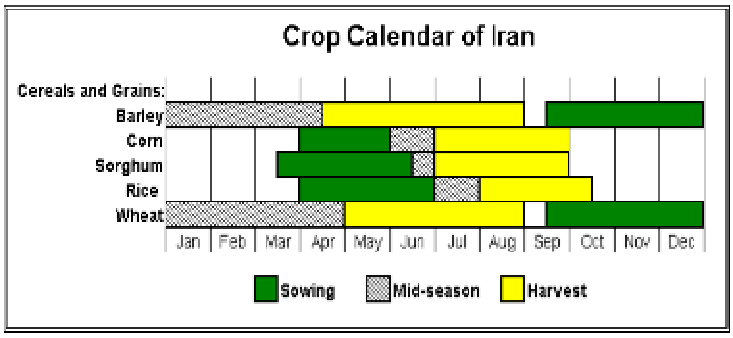


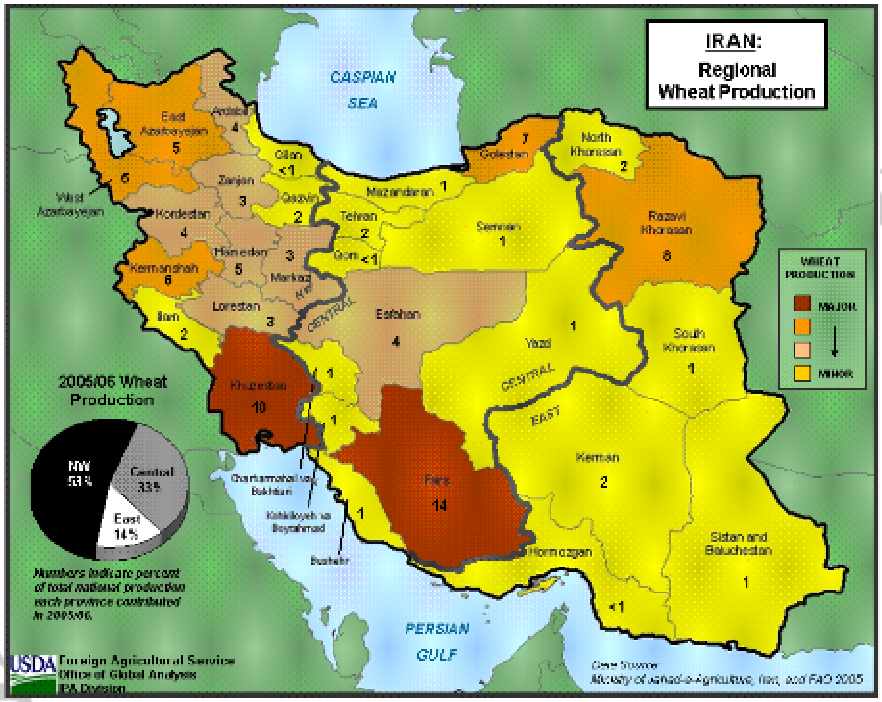
Data Source: NOAA Global Forecast System (GFS)
Data Provided by: NOAA CPC
Supporting: USDA/FAS/OGA/IPAD

Figure 14. NOAA Climate Prediction Center 7-day precipitation forecast.

FAS-Office of Global Analysis
USDA

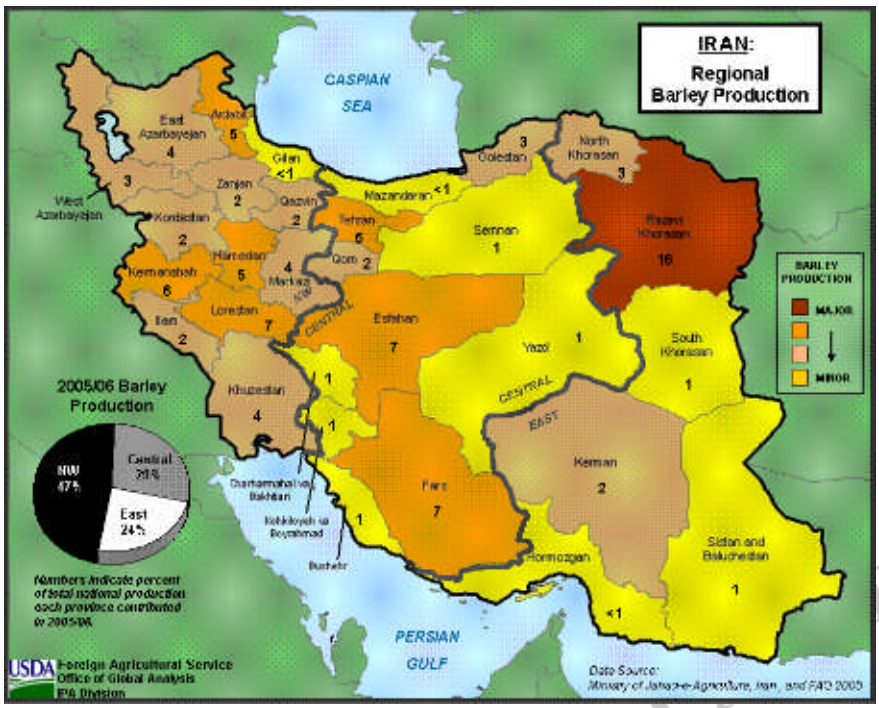
Appendix.



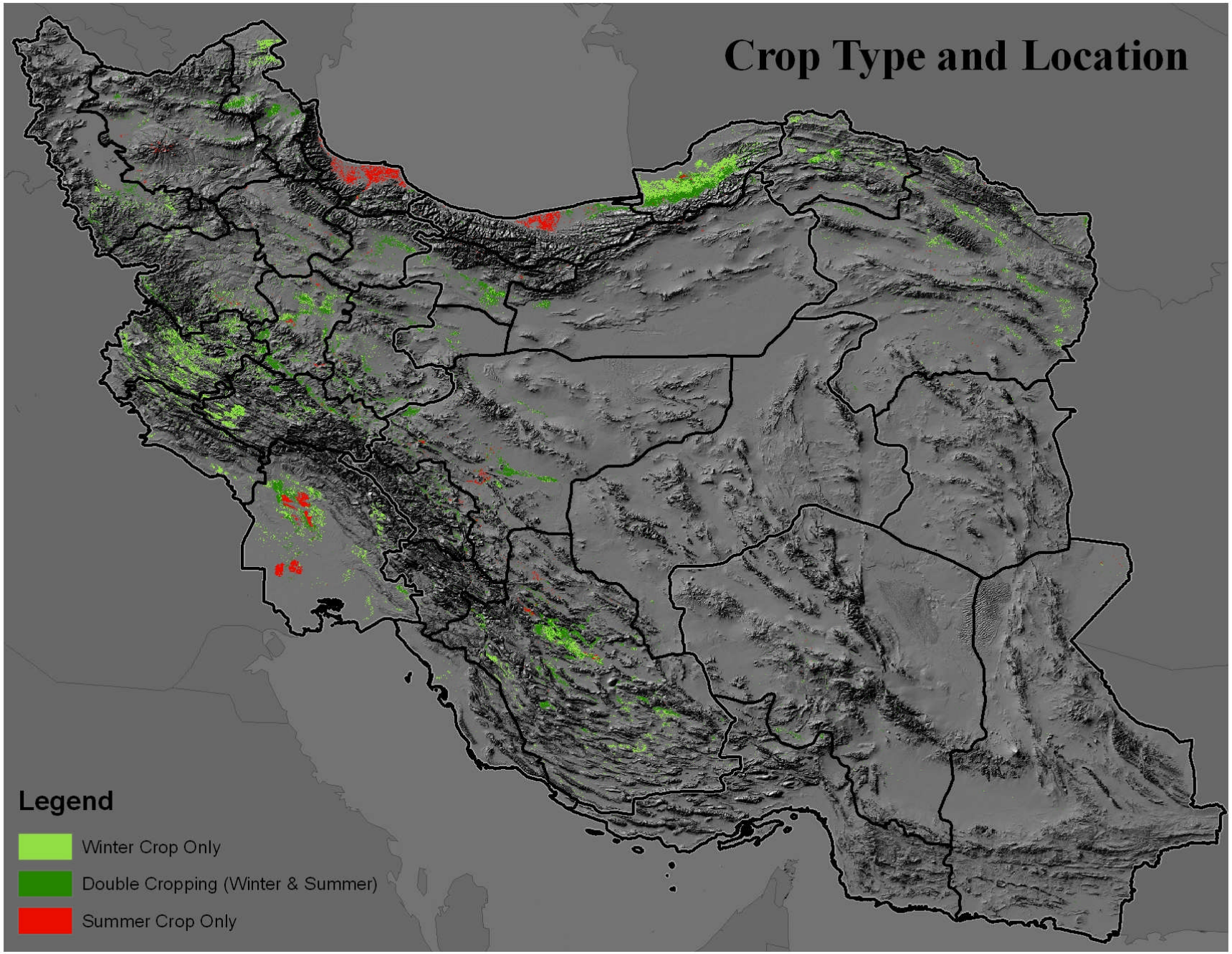


FAS Analysis

FAS – Office of Global Analysis (OGA)
United States Department of Agriculture (USDA)
International Operational Agriculture Monitoring Program

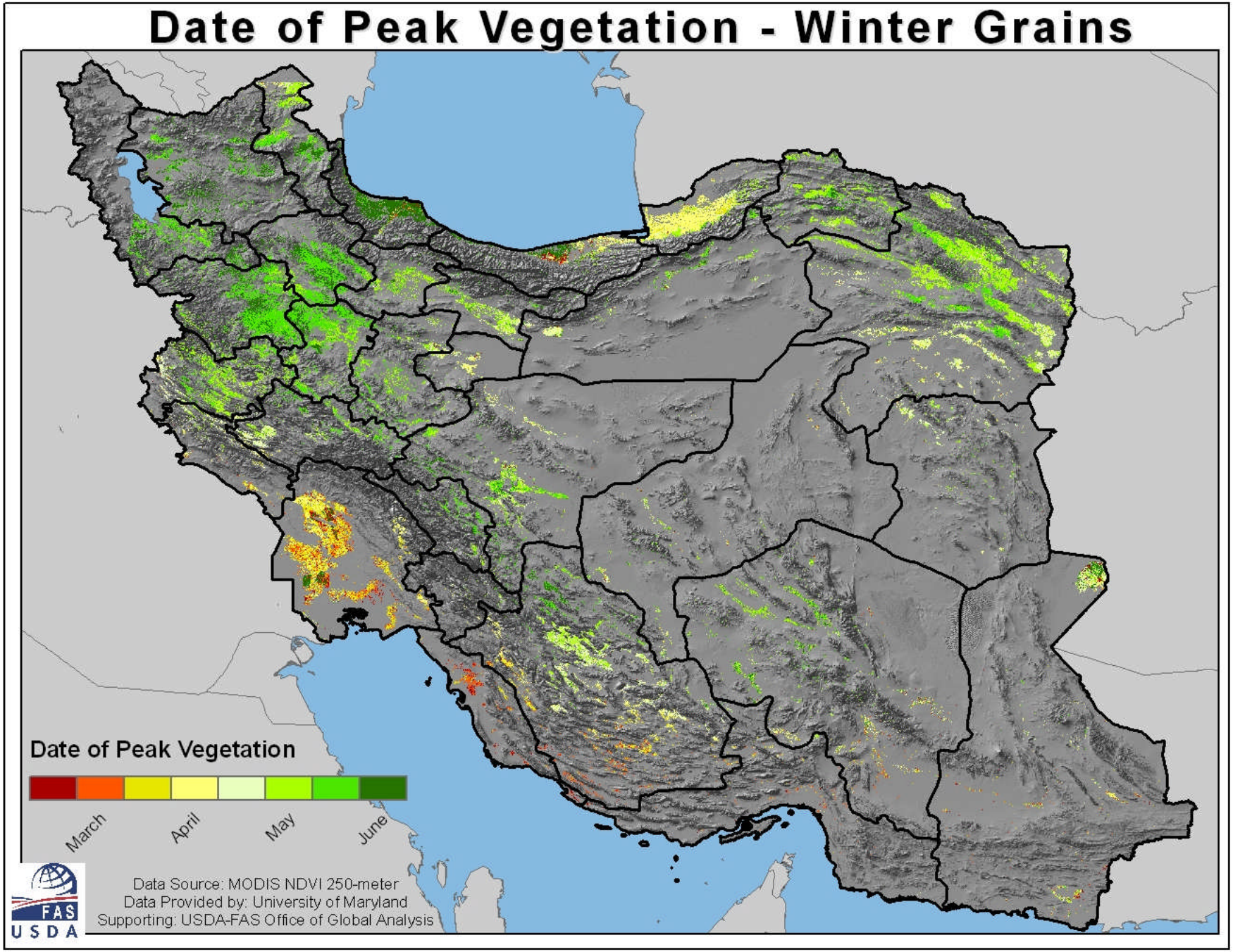


FAS-Office of Global Analysis
USDA


Crop Type and Location
Legend
Winter Crop Only
Double Cropping (Winter & Summer)
Summer Crop Only

FAS-Office of Global Analysis
USDA

FAS – Office of Global Analysis (OGA)
United States Department of Agriculture (USDA)
International Operational Agriculture Monitoring Program



FAS – Office of Global Analysis (OGA)
United States Department of Agriculture (USDA)
International Operational Agriculture Monitoring Program

For more information contact:
Michael Shean | Michael.Shean@fas.usda.gov | (202) 720-7366 USDA-FAS, OGA or
Joe Fortier | Joseph.Fortier@asrcms.com | (202)720-6652 ASRC Management Services

FAS-Office of Global Analysis
USDA