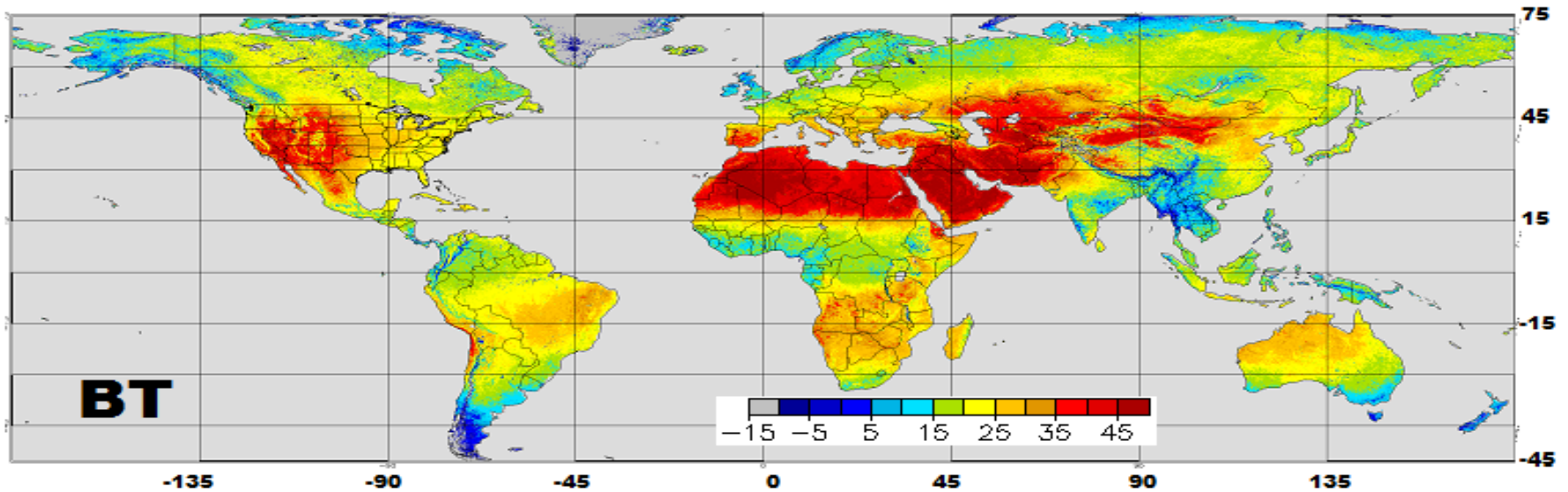
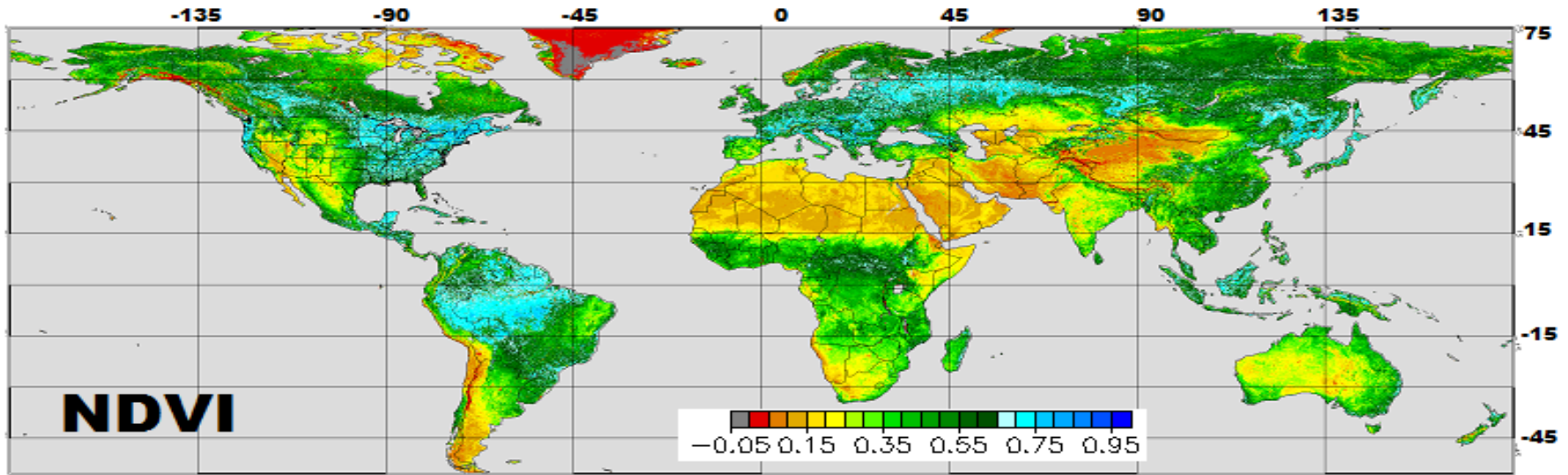


Vegetation Health from SNPP/VIIRS

Wei Guo & Felix Kogan

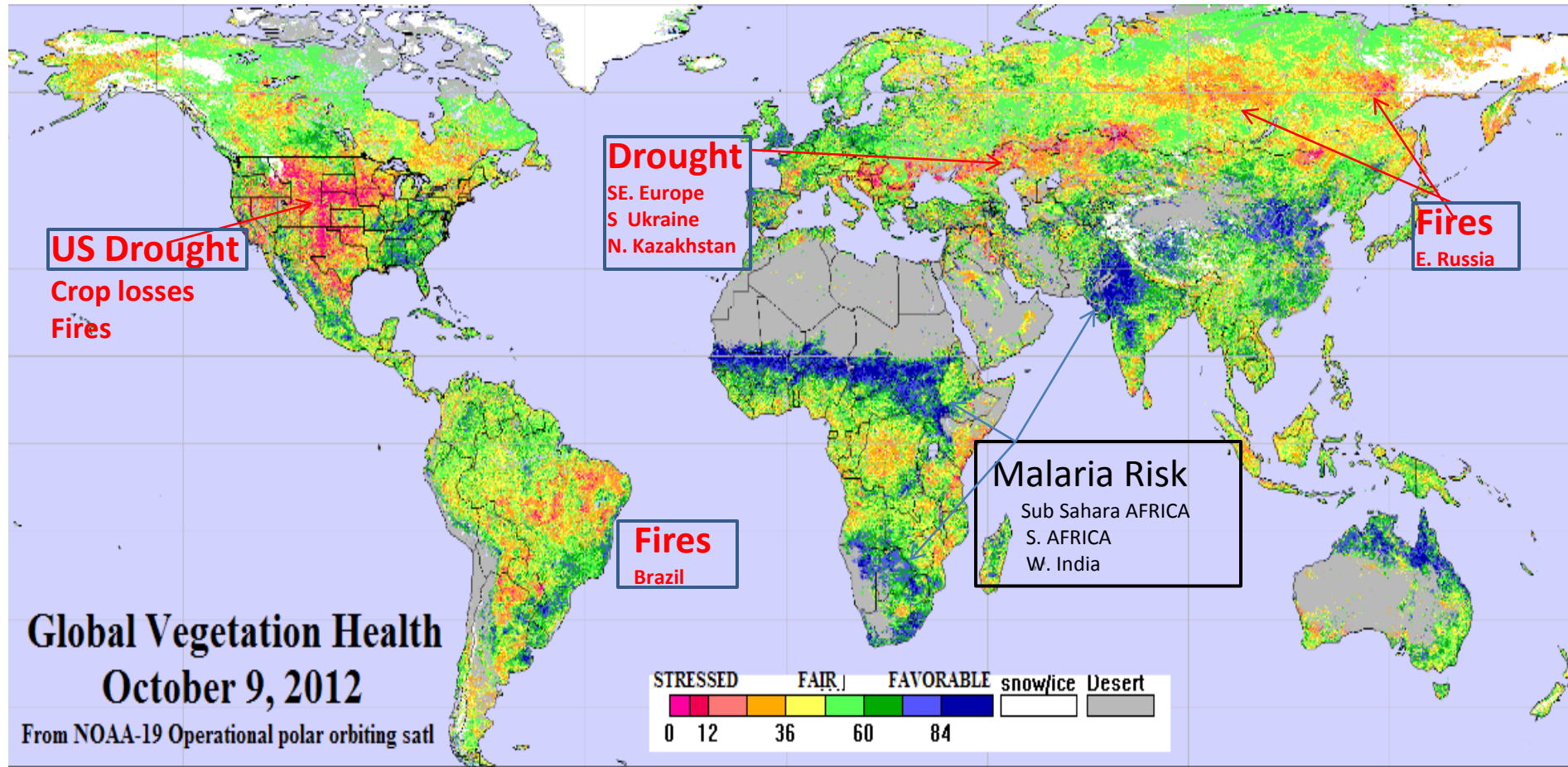
JPSS-16
2016

WE START FROM: Normalized Difference Vegetation Index (NDVI) & Brightness Temperature (BT)



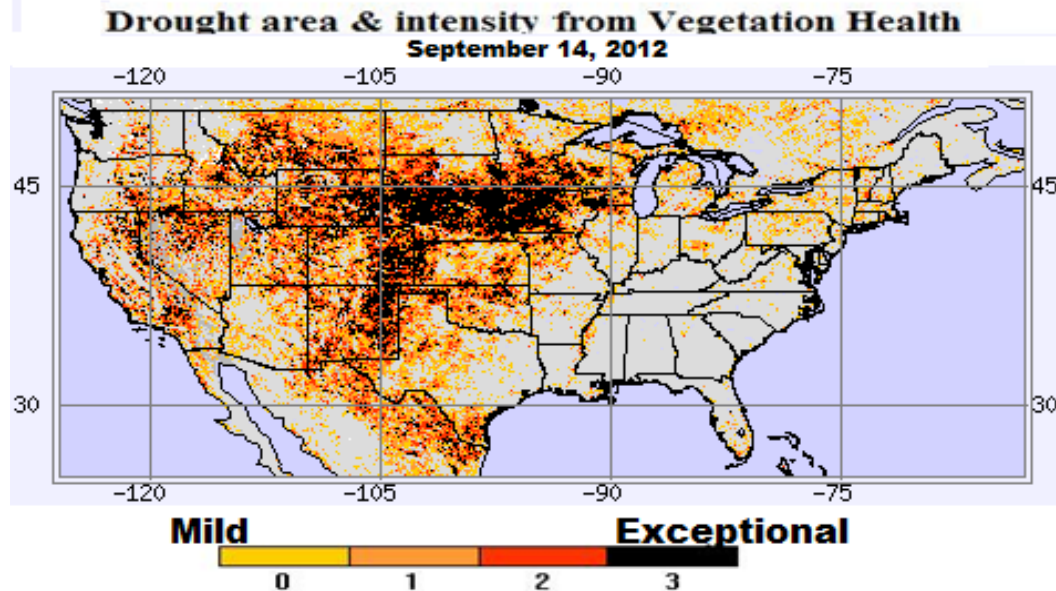
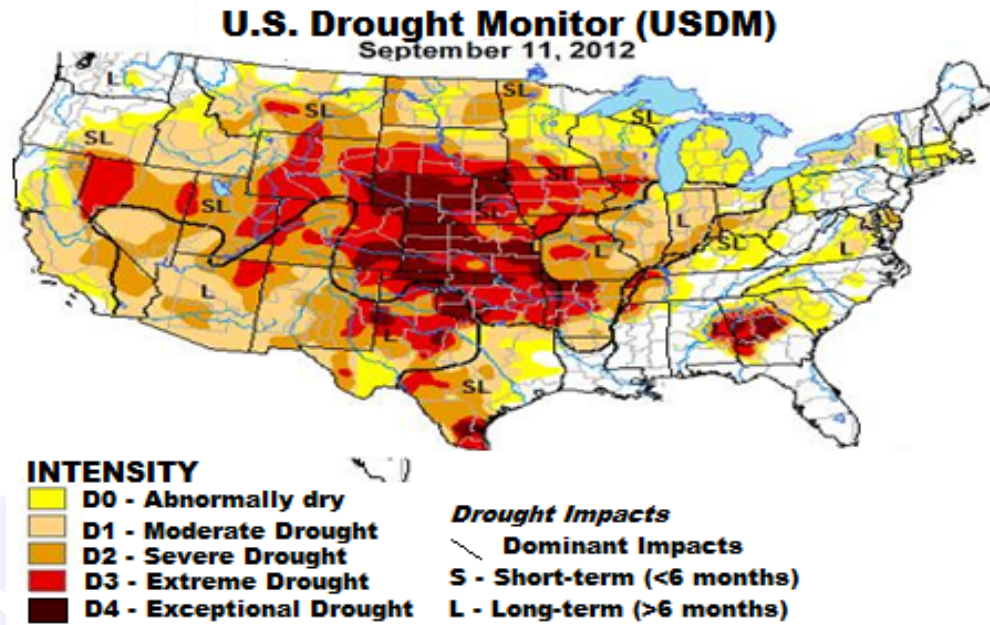
WE PRODUCE: Global Vegetation Health (VH)

From AVHRR/NOAA-19 Operational Polar Orbiting Satellite



<http://www.star.nesdis.noaa.gov/smcd/emb/vci/VH/index.php>

Drought from USDM & SNPP/VIIRS

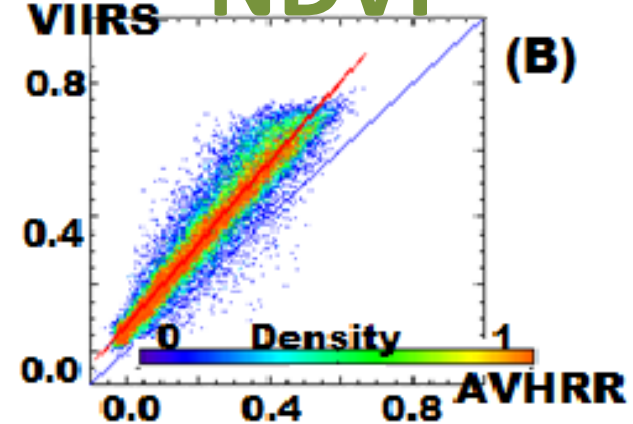
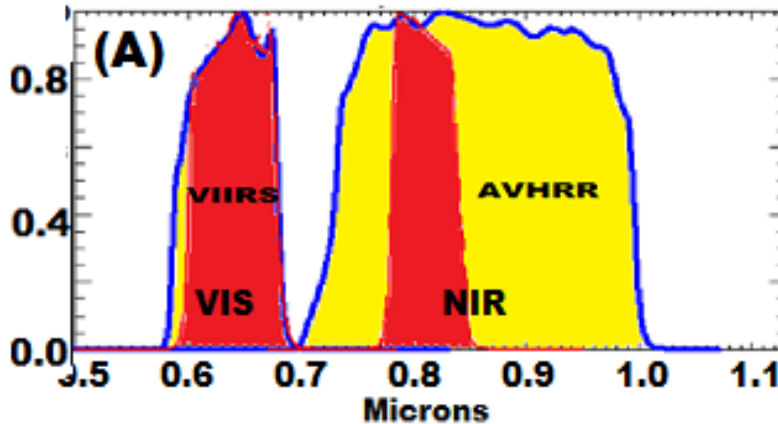


NEW vs OLD: VIIRS versus AVHRR

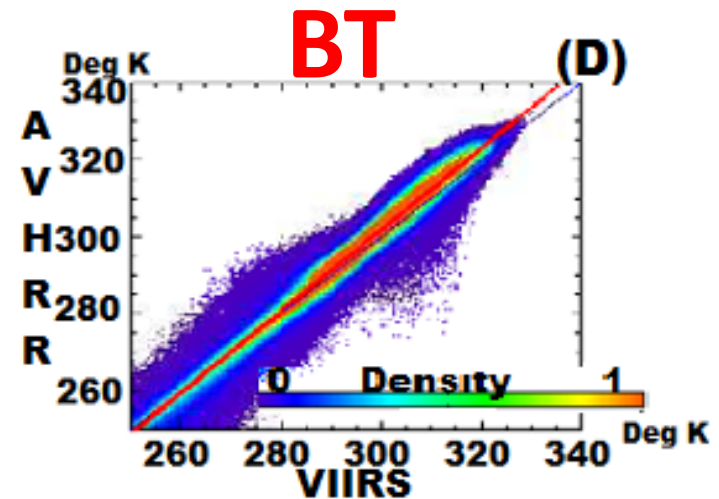
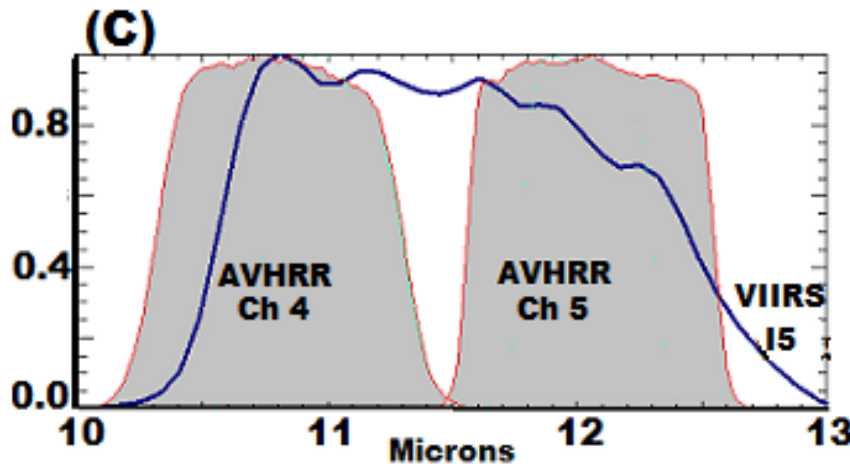
Channels

Climate data records problems

NDVI

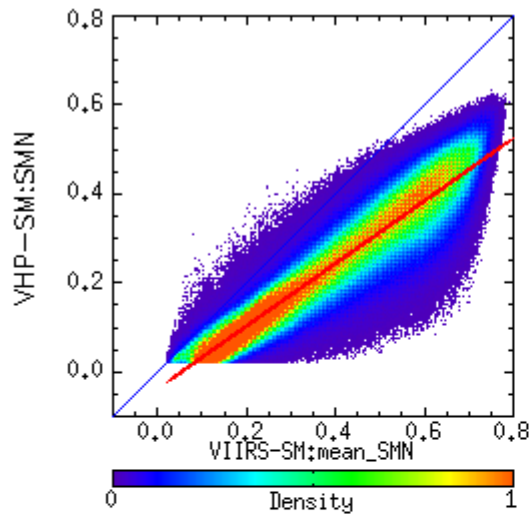


Normalized Difference Vegetation Index (NDVI)



Brightness Teperature (BT)

ADJUSTMENT: NDVI (SMN): AVHRR-VIIRS time series

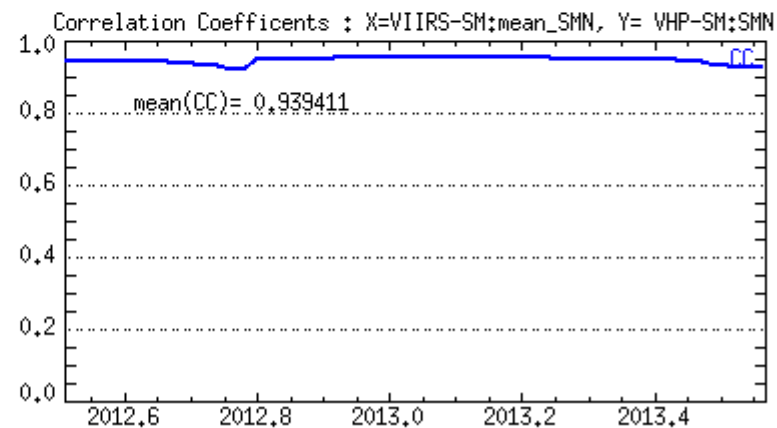
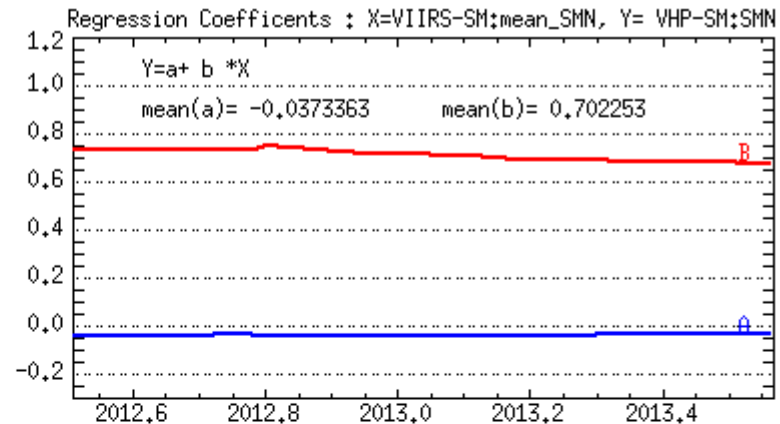


$$Y = a + b * X$$

a = -0,0374925
b = 0,703031

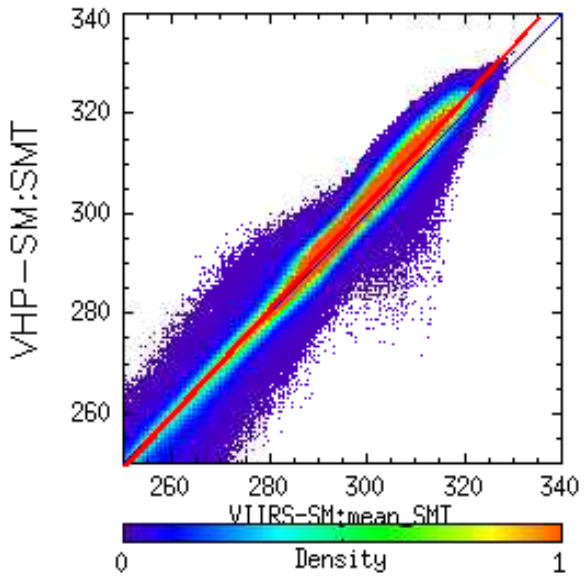
Nsamples=4963003
CC = 0,9374
RMSE =0,0486750

lon=[-180,00, 180,00] lat=[-40,00, 40,00]



Data used: 2012 week 27 to 2013 week 30

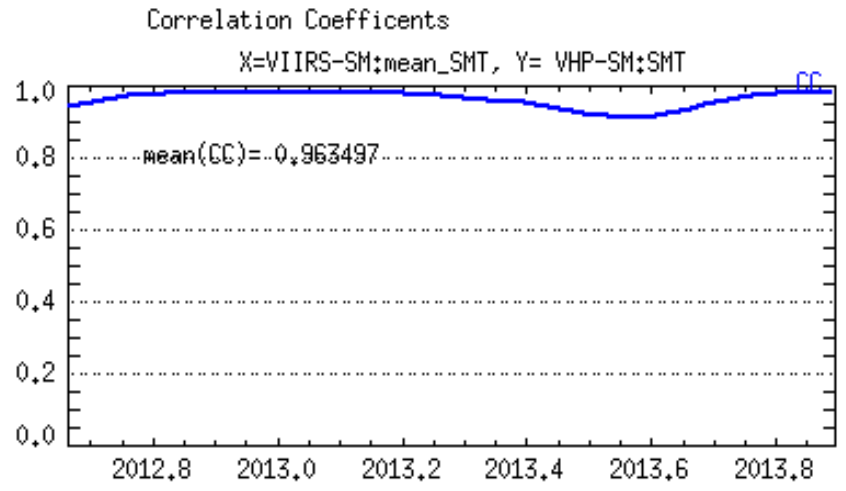
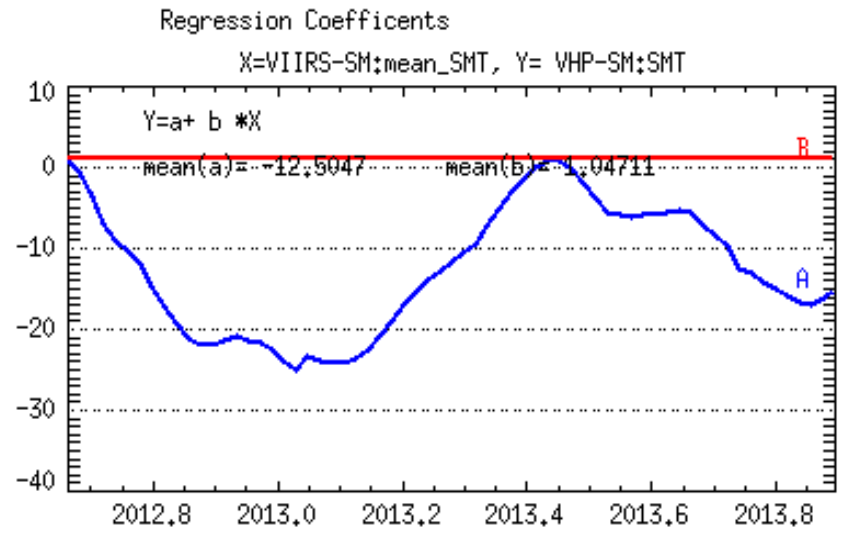
ADJUSTMENT: BT (SMT): AVHRR-VIIRS COR and Time Series



$Y = a + b * X$
 $a = -15.3288$
 $b = 1.05696$

Nsamples=8638092
 CC = 0.9610
 RMSE =3.51405

lon=[-180.00, 180.00] lat=[-40.00, 60.00]

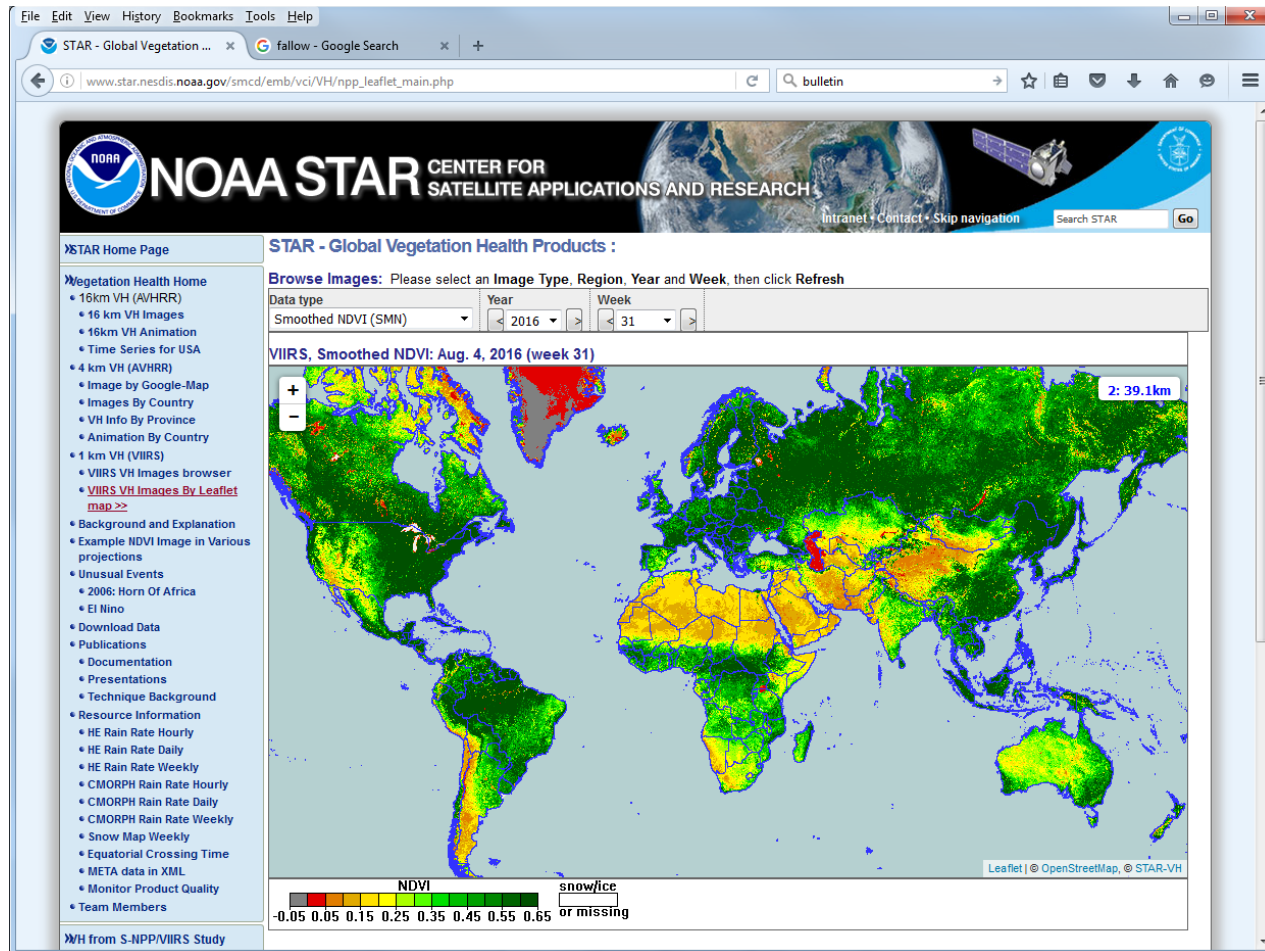


Data used: 2012 week 35 to 2013 week 47

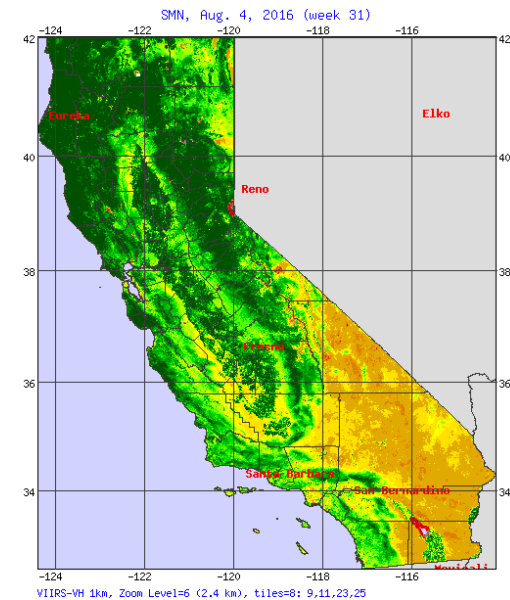
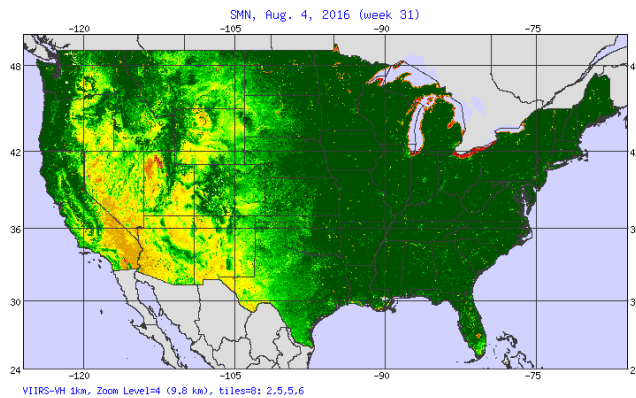
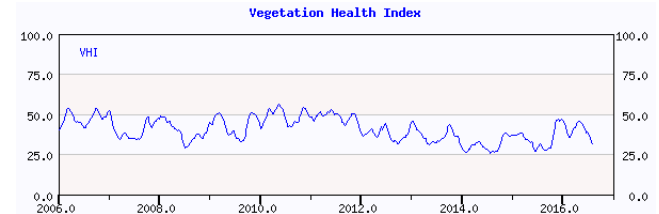
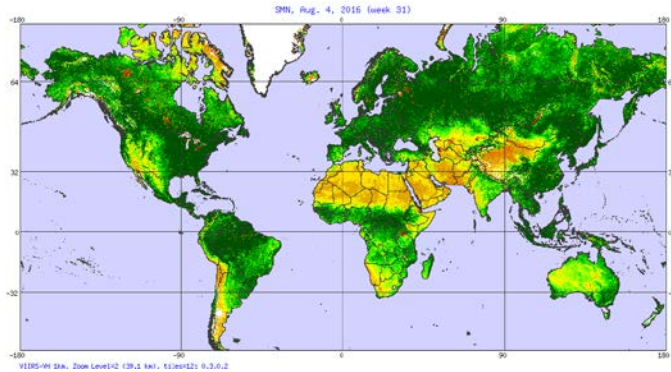
Using High resolution VH products

- Present high resolution data by
 - Map tiles
 - Detail map of province or sub-divisions
- Using with GIS data

Viewed the 1km VH products by Leaflet (like Google map)

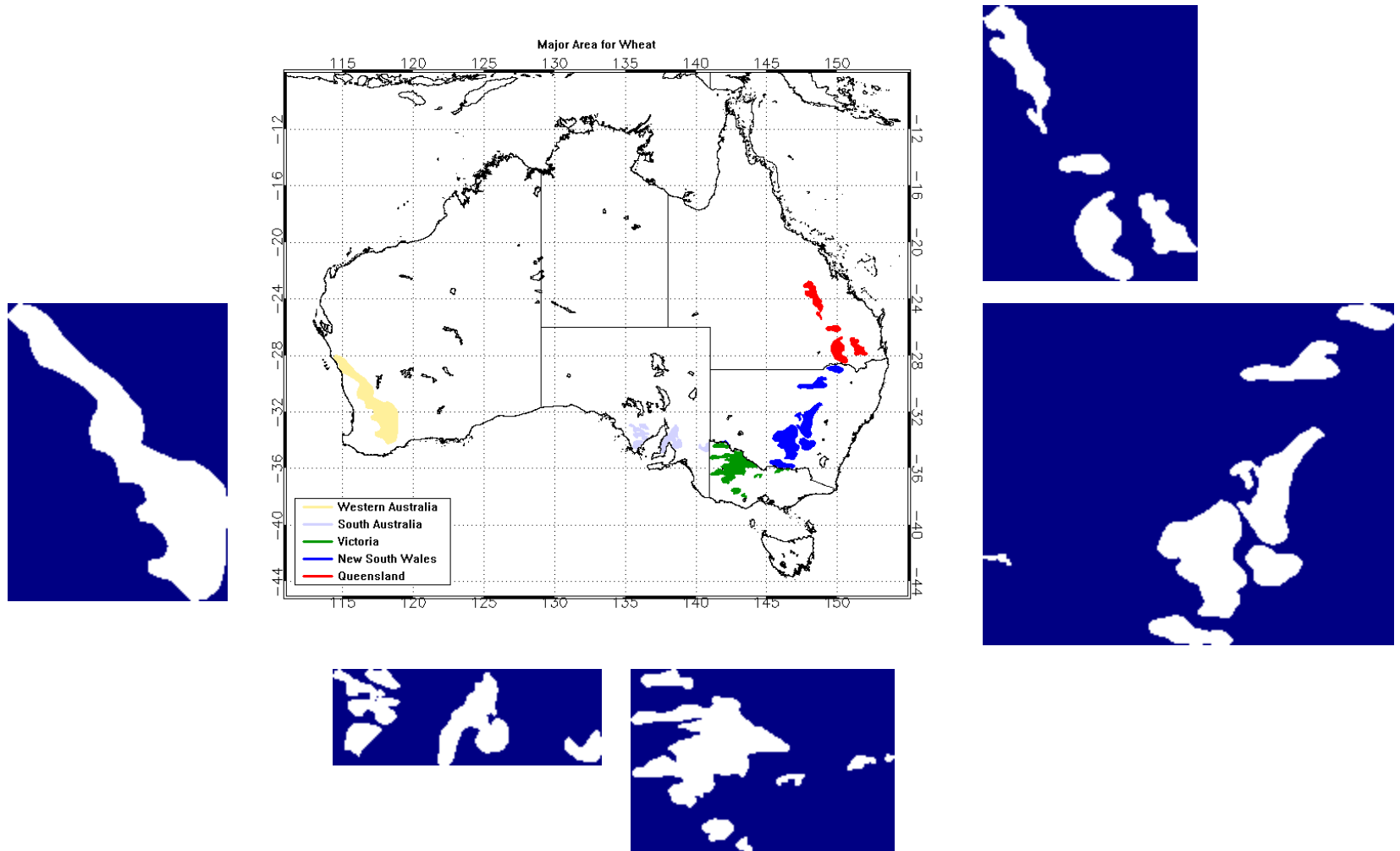


Using map tiles technology to present 1km VH data through web pages



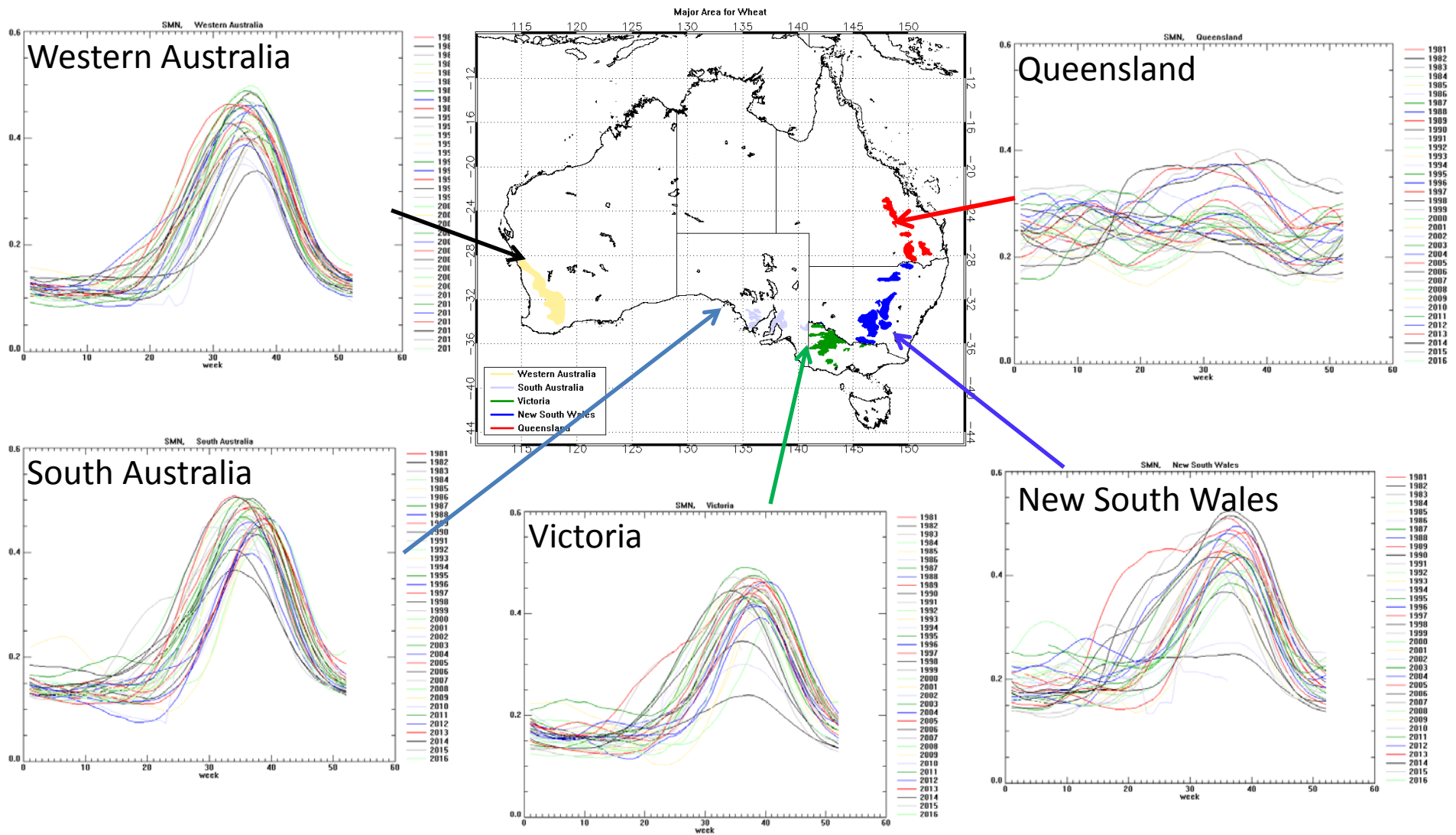
Users access the country and province maps by clicking the web page.

Major Wheat Area of Australia

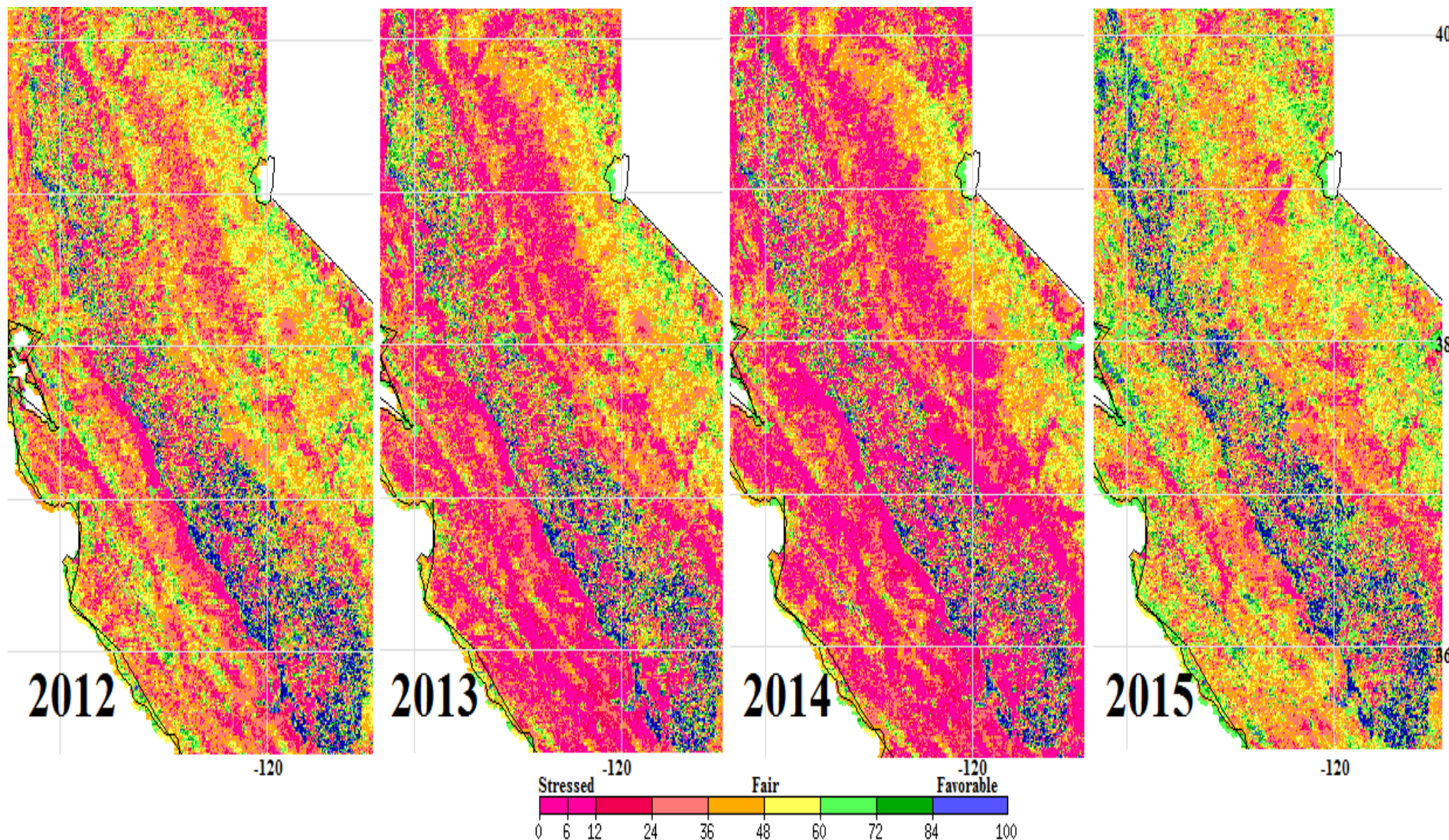


The small images with blue background are mask files generated from the polygons provided by USDA.

SMN time series, averaged for the selected regions



EXPERIMENTS: 500 m S-NPP/VIIRS Vegetation Health: California



S-NPP/VIIRS-500m Vegetation health, June 12, USA, California, Central Valley

Vegetation Health from SNPP/VIIRS & Economic Indicators

