

NASA/NCEAS/iPlant Update

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MODIS Cloud Product (MOD06_L2)

Level 2 (swath) data at 1km resolution:

1. Cloud Optical Thickness (0 to 100)
2. Cloud Optical Thickness Uncertainty (0 to 200%)
3. Cloud Effective Radius: particle size (0 to 90 μm)
4. Cloud Effective Radius Uncertainty(0 to 200%)
5. Cloud Water Path (0 to 9000 g/m^2)
6. Cloud Water Path Uncertainty (0 to 9000 g/m^2)
7. Cloud Phase Optical Properties (0=fill, 1=clear, 2=liquid water cloud, 3=ice cloud, 4=undetermined phase cloud)
8. Cloud Multi Layer Flag (0=fill, 1=single layer, 2 through 8=increasing confidence of multilayer clouds)

MODIS Cloud Product (MOD06_L2)

Processing steps

1. Spatial search at
<http://ladsweb.nascom.nasa.gov/data/search.html>
2. Crop to ROI using web form
3. Download
4. Swath → HDF-EOS Grid using hegtool
<http://newsroom.gsfc.nasa.gov/sdptoolkit/HEG/HEGDownload.html>
5. HDF-EOS → NetCDF using ncl_convert2nc (NCL)
6. Align extents to facilitate analysis (not yet completed)
7. Extract station values to compare with observed precipitation

MOD06 Processing

2000-2012 Oregon data:

- 9,243 swath files
- ≈ 600 GB data (before spatial subsetting)
- Swath \rightarrow Grid in progress
- 441 days (≈ 900 swath files) completed (2006-2007)

Swath Data

Legend

Oregon



Cloud_Effective_Radius (um)



0



500



1000



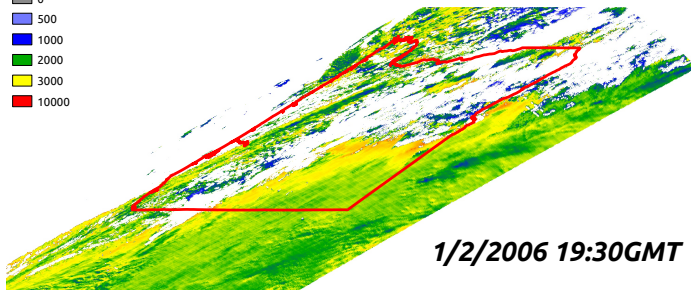
2000



3000



10000



Swath Data

Legend

Oregon



Cloud_Effective_Radius (um)



Null



0



500



1000



2000



3000



10000



1/2/2006 19:25GMT

Swath Data

Legend

Oregon



Cloud_Effective_Radius (um)



Null



0



500



1000



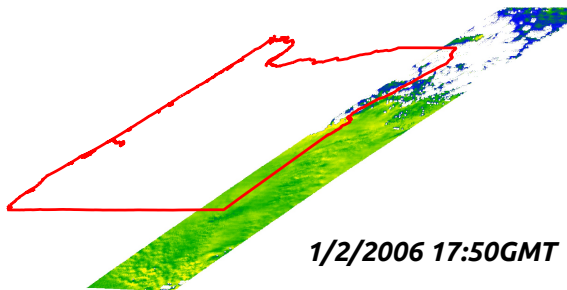
2000



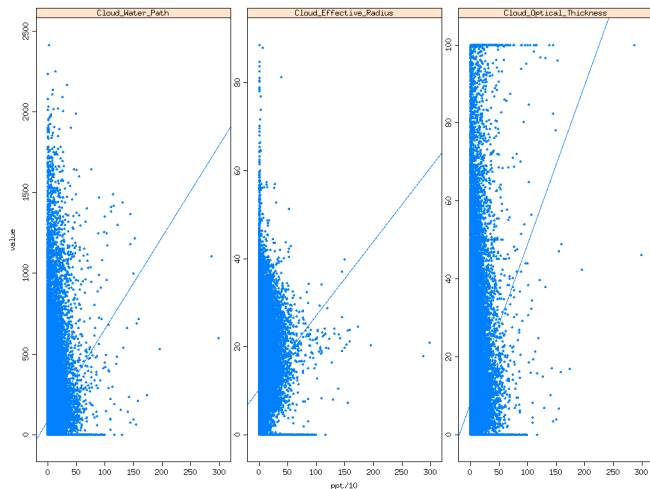
3000



10000



Comparison of daily ppt and MOD06



not looking so good.... but don't give up yet!

Comparison of mean annual ppt and 441 days of MOD06



Aggregating leads to stronger correlations

Next Steps

Goal: Mean Monthly Precipitation (Climatologies)

1. Finish processing the 2000–2012 MOD06 → NetCDF
2. Consider quality Control flags and parameter uncertainties
3. Explore relationships of various summaries (mean, quantiles, etc.) with mean monthly precipitation (station and PRISM)