Hi Guys,

OK so Ross asked for some clarity around the SMIPS outputs, and it is confusing, Luigi’s naming scheme was not the clearest. I’ve tried to lay it out below. There are basically three stages post the data preparation;

1. the first is called OpenLoop this has no data assimilation applied
2. the second is called ForeCast. It uses the Analysis (assimilation applied, see #3 below) results from the previous day and performs the next time step. No assimilation is applied to the current timestep. Think of it as an intermediate step.
3. The third is called Analysis. This applies assimilation to the results of the Forecast time step in #2 above.

I’ve added more details below. I could also publish more data such as the SMOS Wetness index that is used in the Assimilation step.

Matt

**No assimilation AKA OpenLoop:**

Raw\_API =  /SMIPSv0.5/API\_OPENLOOP/ #An absolute value based on calculations using the previous days Raw\_API

Scaled\_API\_Index = /SMIPSv0.5/API\_RZ\_Wetness\_OpenLoop/ #Raw\_API values scaled to an index 1-10 between the total anlysis Max and Min values. netCDF = [openloopwetfile,'Openloop Wetness Index', 'unitless'], [openloopweterrorfile,'Openloop Wetness Index Error Variance', 'unitless'],

Volumetric\_Soil\_Moisture = /SMIPSv0.5/API\_VOlSM\_OpenLoop/ #Scaled\_API\_Index converted to a volumetric value. netCDF = [openloopvolfile,'Openloop Volumetric SM', 'cubic metres per cubic metre'], [openloopvolerrorfile,'Openloop Volumetric SM Error Variance', 'unitless']

**Assimilation no Assimilation on Current Timestep AKA Forecast:**

Raw\_API\_Assim\_0 = /SMIPSv0.5/API\_FORECAST/ #An absolute value based on calculations using the previous days Raw\_API\_Assim\_1 (R.E. the previous day had assimilation applied but this timestep hasn't yet)

Scaled\_API\_Index\_Assim\_0 = /SMIPSv0.5/WETNESS\_FORECAST/ #Raw\_API\_Assim\_0 values scaled to an index 1-10 between the total anlysis Max and Min values

Volumetric\_Soil\_Moisture\_Assim\_0 = SMIPSv0.5/VOlSM\_FORECAST/ #Scaled\_API\_Index\_Assim\_0 converted to a volumetric value

**Assimilation Assimilation on Current Timestep AKA Analysis:**

Raw\_API\_Assim\_1 = /SMIPSv0.5/API\_ANALYSIS/ #Raw\_API\_Assim\_0 value with data assimilation applied. netCDF = [analysiswetfile,'Analysis Wetness Index', 'unitless'], [analysisweterrorfile, 'Analysis Wetness Index Error Variance', 'unitless']

Scaled\_API\_Index\_Assim\_1 = /SMIPSv0.5/WETNESS\_ANALYSIS/ #Raw\_API\_Assim\_1 values scaled to an index 1-10 between the total anlysis Max and Min values

Volumetric\_Soil\_Moisture\_Assim\_1 = /SMIPSv0.5/VOlSM\_ANALYSIS/ #Scaled\_API\_Index\_Assim\_1 converted to a volumetric value. netCDF = [analysisvolfile,'Analysis Volumetric SM', 'cubic metres per cubic metre'], [analysisvolerrorfile,'Analysis Volumetric SM Error Variance', 'unitless']

**Blended Rainfall used to drive SMIPS**.

netCDF = [blendprecipfile,'Blended Precipitation', 'millimetres']

**Code to convert scaled wetness index into a volumetric surface**

    Volumetric\_Soil\_Moisture <- Scaled\_API\_Index \* ((DUL3 \* 1.05) - (LL15 \* 0.7))

    Volumetric\_Soil\_Moisture[Volumetric\_Soil\_Moisture < 0] <- 0

    Volumetric\_Soil\_Moisture[Volumetric\_Soil\_Moisture > 300.] <- 300.