Quick guide to use Envirolytic dashboard to understand which information is available

Envirolytic, Feb 28, 2012.
pelustondo@envirolytic.com

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1.General data structure concepts.

A primary goals of our data structure is simplicity and uniformity.

Envirolytic Environmental Data is stored as netCDF files centrally residing on a Azure Cloud Storage Account using a very simple model that will evolve and get richer while trying to keep options simple.

Currently, all the environmental data is partitioned by environmental variable and splitted by day. All data is on a 32km grid covering north america. Some grids will be just 'monolevel' on 3 dimensions "time,x,y". Some information may have a 4 "level" dimension. Inside every day, we may have 8 measures, one every 3 hours.

2.How to use the dashboard. (Year level)

Login to http://envirolytic. azurewebsites.net/ and click on the "Dashboard" menu option.

You will see here a report similar to the one showed here. All the variables are listed showing how much information is available per year

Dashbord - Variables on Storage - Status by Time from 2005 to 2014

Variable	%Fill	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	
BoundaryLayerHeight	11%	0%	0%	0%	0%	0%	0%	0%	100%	0%	0%	ExploreFiles
CloudCoverAggregate	11%	0%	0%	0%	0%	0%	0%	0%	100%	0%	0%	ExploreFiles
DewPointTemperature	11%	0%	0%	0%	0%	0%	0%	0%	100%	0%	0%	ExploreFiles
GeopotentialHeight	11%	0%	0%	0%	0%	0%	0%	0%	100%	0%	0%	ExploreFiles
Helicity	11%	0%	0%	0%	0%	0%	0%	0%	100%	0%	0%	ExploreFiles
HumidityRelative	11%	0%	0%	0%	0%	0%	0%	0%	100%	0%	0%	ExploreFiles
PrecipitationAccumulated	11%	0%	0%	0%	0%	0%	0%	0%	100%	0%	0%	ExploreFiles
PrecipitationRate	11%	0%	0%	0%	0%	0%	0%	0%	100%	0%	0%	ExploreFiles
Pressure	11%	0%	0%	0%	0%	0%	0%	0%	100%	0%	0%	ExploreFiles
PressureSeaLevel	11%	0%	0%	0%	0%	0%	0%	0%	100%	0%	0%	ExploreFiles
SnowAmount	11%	0%	0%					0%	100%	0%	0%	ExploreFiles
SoilMoisture	11%	0%	0%	0%					100%	0%	0%	ExploreFiles
SoilTemperature	11%	0%	0%	0%				0%	8%	0%	0%	ExploreFiles
SurfaceRunoff	11%	0%	0%		0%	0%	0%	0%	100%	0%	0%	ExploreFiles
Temperature	11%	0%	0%	0%	0%	0%	0%	0%	8%	0%	0%	ExploreFiles
TurbulentKineticEnergy	11%	0%	0%	0%	0%	0%	0%	0%	100%	0%	0%	ExploreFiles
Visibility	11%	0%	0%	0%	0%	0%	0%	0%	100%	0%	0%	ExploreFiles

Click on a year to drill down to the month level

2.How to use the dashboard. (Month Level)

Dashbord - Variables on Storage for 2012 Status by Month

Variable	%Fill	1	2	3	4	5	6	7	8	9	10	11	12
BoundaryLayerHeight	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
CloudCoverAggregate	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
DewPointTemperature	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
GeopotentialHeight	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Helicity	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
HumidityRelative	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
PrecipitationAccumulated	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
PrecipitationRate	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Pressure	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
PressureSeaLevel	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
SnowAmount	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
SoilMoisture	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
SoilTemperature	8%	100%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
SurfaceRunoff	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Temperature	8%	100%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
TurbulentKineticEnergy	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Visibility	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%

Click on a month to go to the day level

2.How to use the dashboard. (Day Level)

Dashbord - Variables on Storage for year 2012 and Month 8 by Day

Variable	%Fill	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
BoundaryLayerHeight	100%	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
CloudCoverAggregate	100%	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
DewPointTemperature	100%	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
GeopotentialHeight	100%	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Helicity	100%	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
HumidityRelative	100%	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
PrecipitationAccumulated	100%	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
PrecipitationRate	100%	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Pressure	100%	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
PressureSeaLevel	100%													1	1	1	1	1	1
SnowAmount	100%													1	1	1	1	1	1
SoilMoisture	100%	1												1	1	1	1	1	1
SoilTemperature	0%	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SurfaceRunoff	100%	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Temperature	0%	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TurbulentKineticEnergy	100%	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Visibility	100%	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1

Click on any available cell to see explore that variable on that specific day on the standard grid

2.How to use the dashboard. (Grid Level)

Values on File HumidityRelative_2012_01_01.nc for ti...

Max Value: 100 Min Value : 1 MaxPosition Y:6 X:277 MinPosition Y:55 X:188

You can see important metadata information in this header area

| Name:HumidityRelative | GRIB_id:52 | GRIB_name:RH | FillValue:-32767 | actual_range:System.Single[] | add_offset:307.66 | coordinates:lat lon | dataset:NARR 3-hourly | grid_mapping:Lambert_Conformal | level_desc:2m | ...Relative Humidity at 2m | missing_value:32766 | parent_st... |

Color Scale
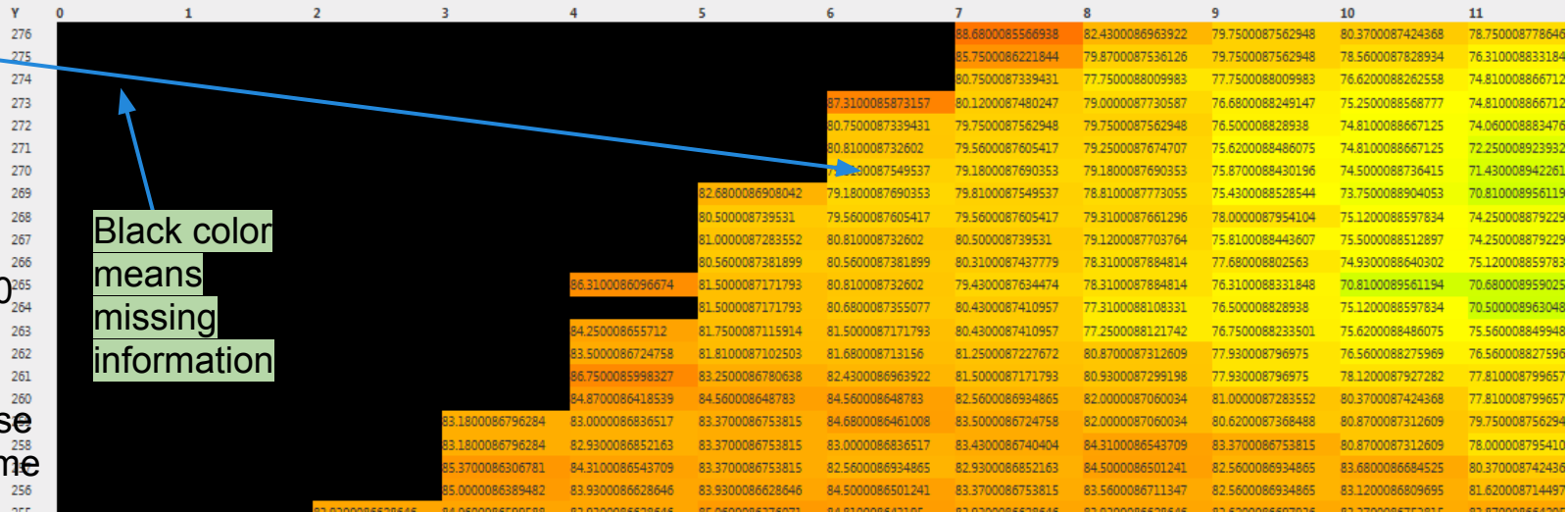
Information is shows here for a specific y (rows) x (columns) for that day (for simplicity this is for level=0 in case the grid has level and 12AM in case the grid has 8 time slots.

Black color means missing information

Zoom to see patterns

For example, is you inspect the relative humidity variable. you will see the West US map pretty clear as california is significantly drier than the ocean around.
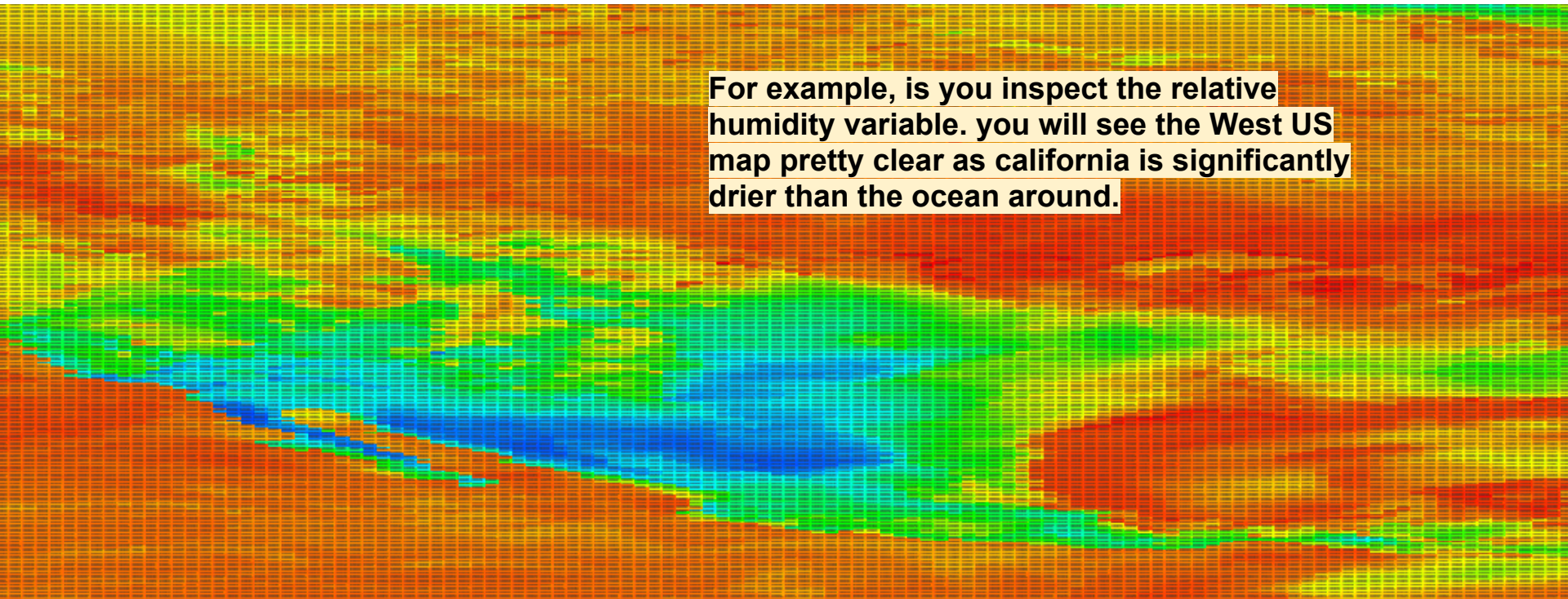
3. Remark on metadata and values

The previous slide shows number in the right unit as specified in the file metadata, for example, if temperature is expressed in Kelvin you will see decimal numbers in the range of 200s.

However, the numbers that you will see in the actual file need to be unpacked with this very simple formula:

RealValue = add_offset + scale_factor * RawValue

this two values can be found in the variable metadata.