Regional Monitoring and forecasting under the CDPMN

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CDPMN

- The Caribbean Drought and Precipitation Monitoring Network (CDPMN) was launched in January, 2009 under the project The Caribbean Water Initiative (CARIWIN, www.mcgill.ca/cariwin).

DATA

- To develop the Caribbean basin maps we are currently using NCEP/NCAR
- http://www.esrl.noaa.gov/psd/data/gridded/data.ncep.reanalysis.surfaceflux.html

  reanalysis rainfall along with land station rainfall from countries that want to participate. What is needed are the monthly rainfall data for land stations up to the month of consideration.

Caribbean rainfall stations

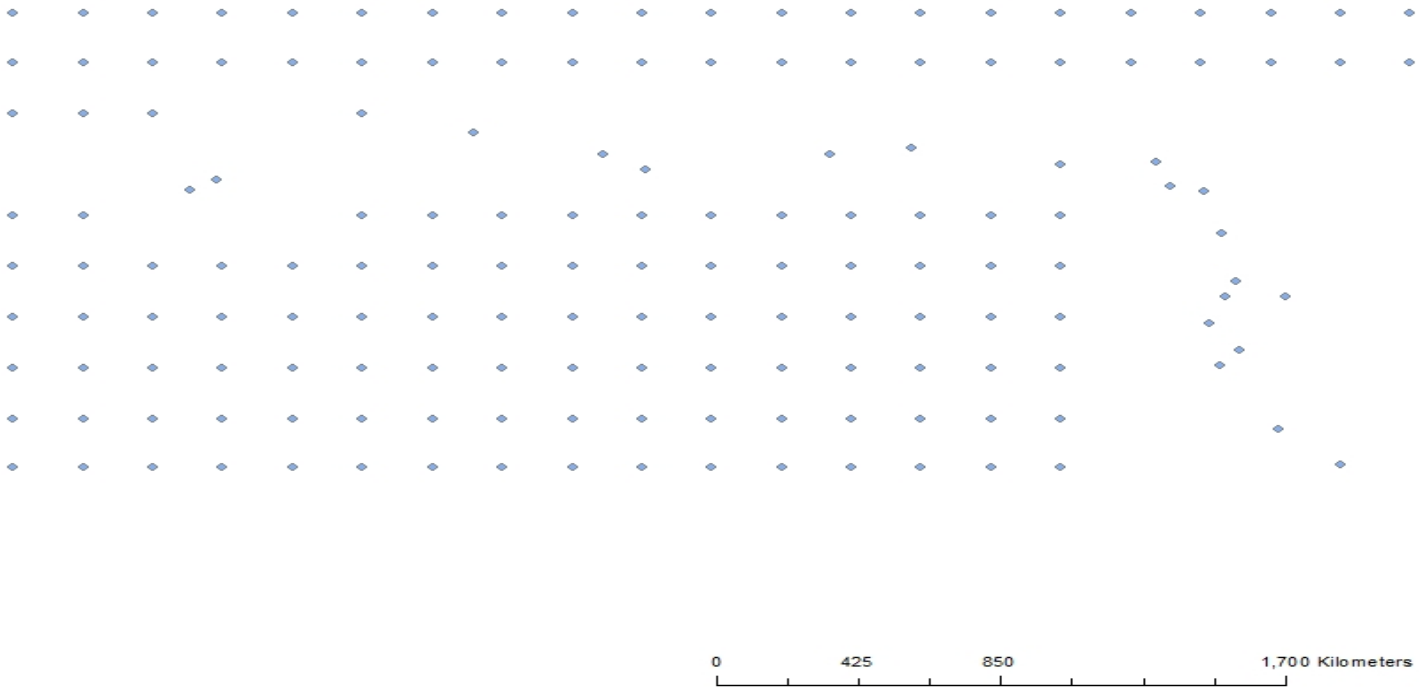
- The eastern Caribbean (including Guyana is well represented with rainfall data from most stations ,we are making an effort to have the French islands represented
- The Dominican Republic is represented and efforts are on the way to have Haiti.
- Further to the West, data is provided by Jamaica, Cayman Islands and Belize

Region Represented
95 - 55W and 5 -25N

Data points

- NCEP reanalysis data from a 2x2 (lat, long) grid
- Data has been standardised from 1949

Grid and Land Station points



Analysis

- Text files are created for use in the SPI calculator
- SPI calculations are done for four time intervals, 1 month ,3 month , 6 month and 12 month.
- A table is then produced for each time interval.

SPI Input file

year mth rainfall

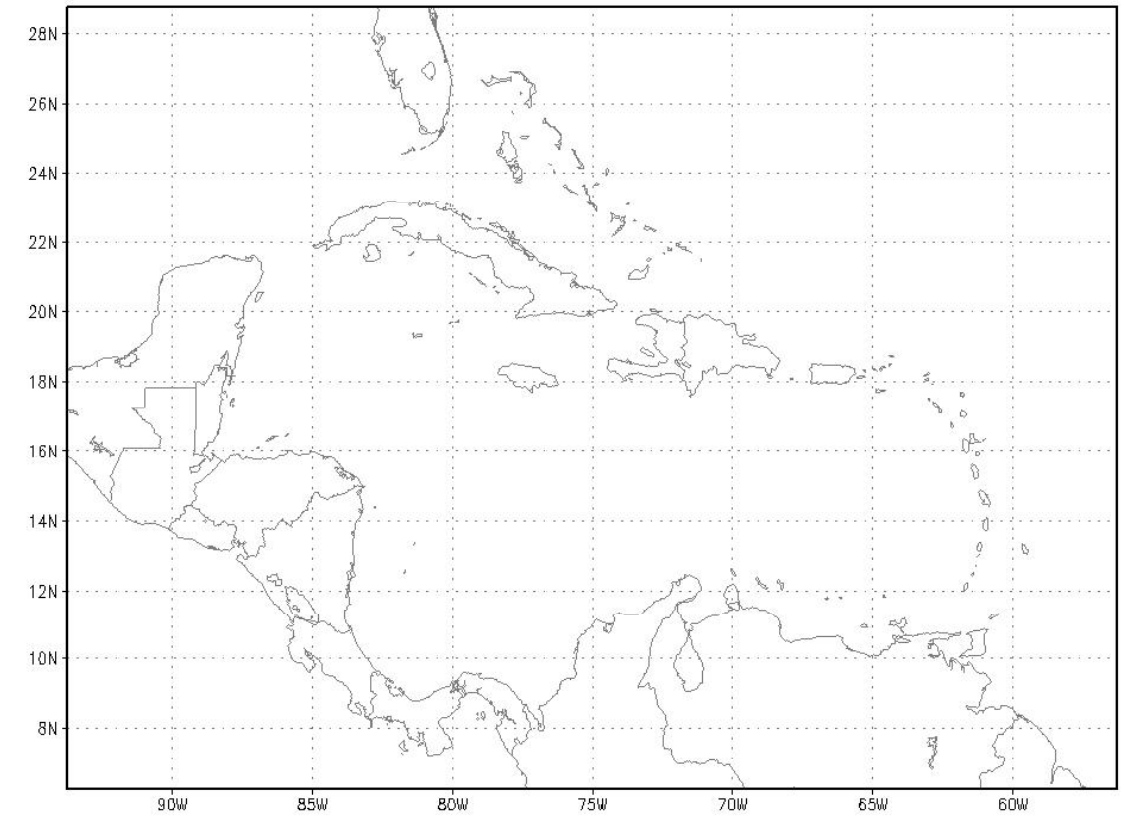
- 1949 3 56
- 1949 4 63
- 1949 5 120

- 2009 11 85
- 2009 12 129

SPI output file

2009	6	1.96	2.04	1.36	0.14
2009	7	-1.48	0.50	1.16	0.09
2009	8	-1.26	0.35	1.00	0.07
2009	9	2.57	0.31	1.45	0.47
2009	10	-0.88	0.43	0.50	0.31
2009	11	2.47	1.87	1.18	0.81
2009	12	0.49	0.96	0.69	1.06

Caribbean Region



SPI Values and precipitation intensities (Mckee et al 1993)

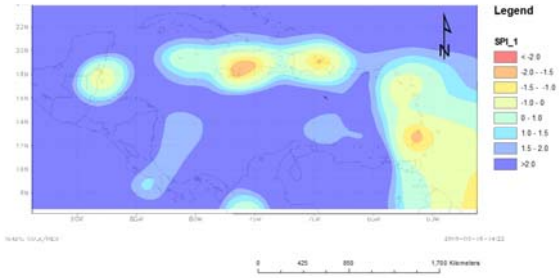
SPI	Category	Probability (%)
2.0 +	Extremely wet	2.3
1.5 to 1.99	Very wet	4.4
1.0 to 1.49	Moderately wet	9.2
-0.99 to 0.99	Near normal	68.2
-1.0 to -1.49	Moderately dry	9.2
-1.5 to -1.99	Severely dry	4.4
-2.0 and less	Extremely dry	2.3

Rainfall Analysis over Different Time Scales Standardized Precipitation index

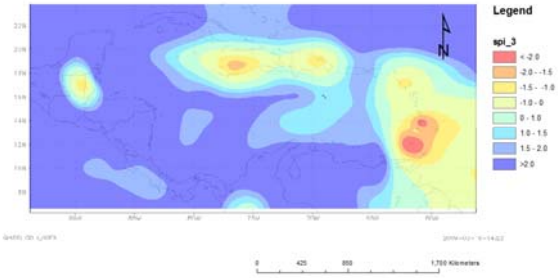
- A one month analysis, reflects short term trends and indication of soil moisture and crop stress.
- A three month analysis, reflects short to medium term moisture and conditions at the beginning of the growing season
- A six month analysis, reflects medium term trends in rainfall showing rainfall distribution over seasons and stream flows and reservoir levels
- A twelve month analysis, reflects long term trends and indications of ground water levels

November SPI

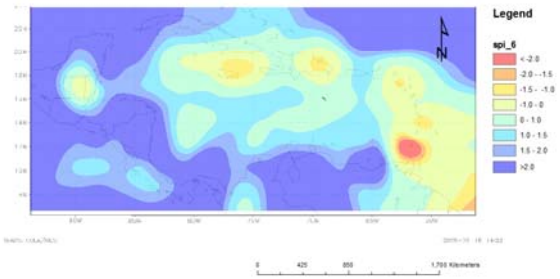
SPI for November 2009



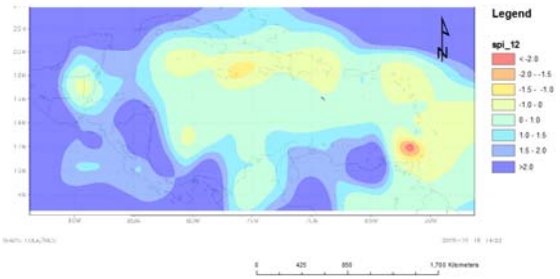
SPI for September to November 2009



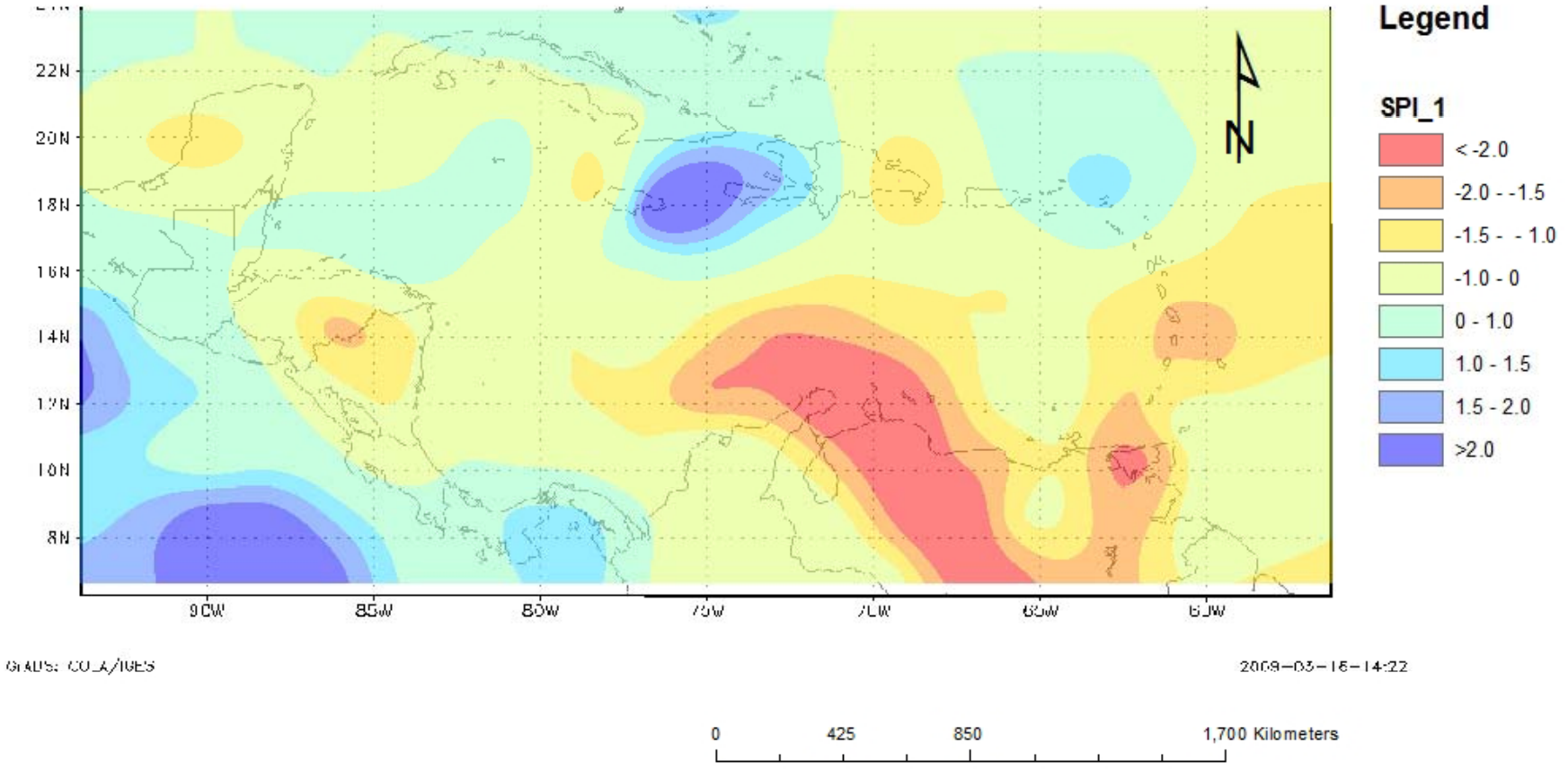
SPI for June to November 2009



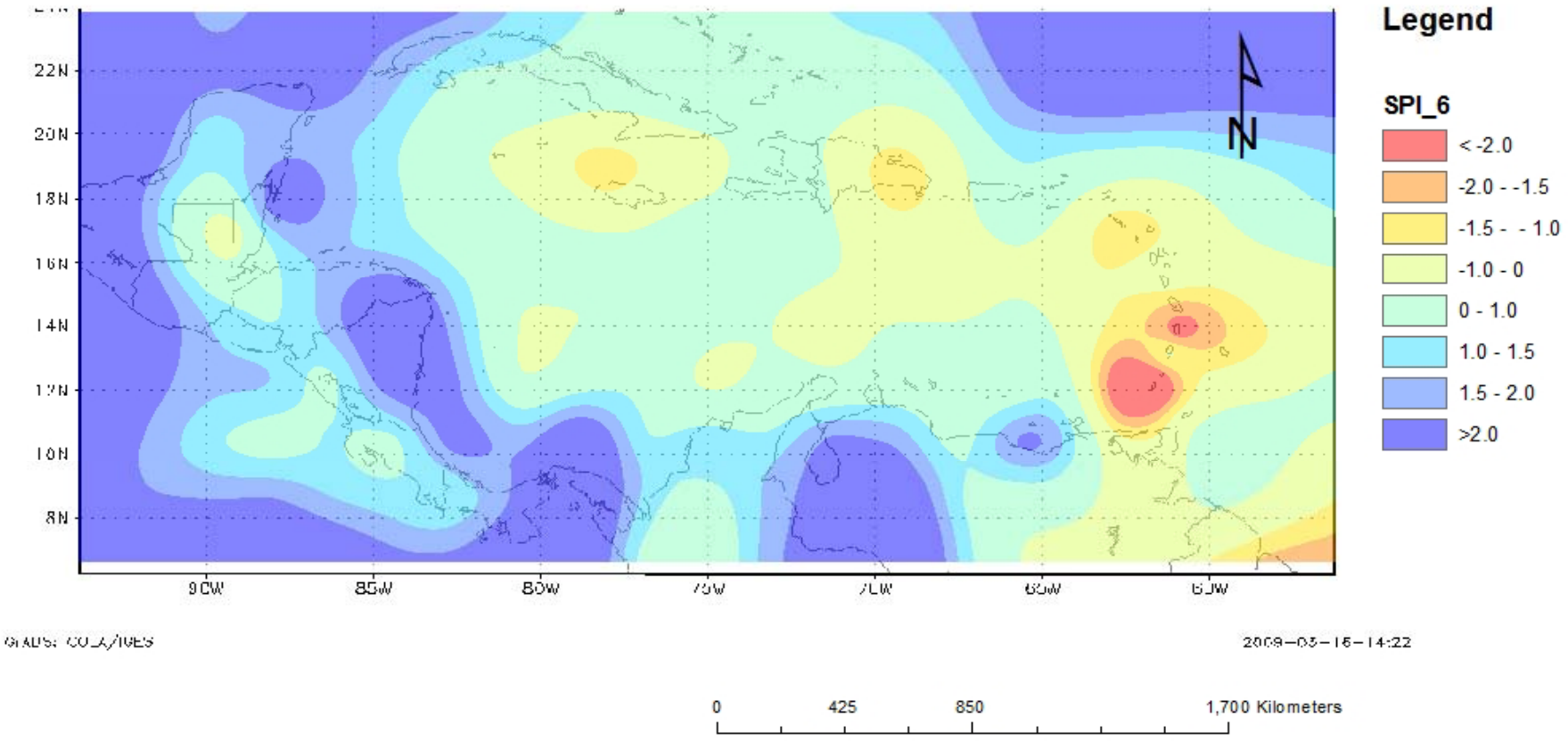
SPI for December 2008 to November 2009



SPI for December 2009



SPI for July to December 2009



Discussion
December 2009

December 2009

The Windward Islands experienced moderately to severely dry conditions, from Trinidad north to Dominica. Antigua and Barbuda and St. Kitts experienced near normal conditions whilst Anguilla was moderately wet. The eastern portion of Guyana was moderately dry as was the case in the Dominican Republic. The eastern half of Jamaica ranged from moderately to extremely wet, whilst the western portion was near normal. Both Cayman Islands and Belize experienced near normal conditions

October to December 2009

The Windward Islands experienced moderately to extremely dry conditions for the period October to December, 2009. From Grenada northward to St. Lucia was extremely dry. The remainder of the eastern Caribbean was near normal. Guyana and the eastern portion of the Dominican Republic were moderately dry. However, Jamaica, Cayman Islands and Belize experienced near normal conditions.

July to December 2009

During the 6 month period, St. Lucia, Grenada and the southern Grenadines were severely to extremely dry. Barbados, St. Vincent and the northern Grenadines as well as Antigua and St. Kitts further north experienced moderately dry conditions. Anguilla experienced near normal conditions. Further to the west, apart from the moderately dry condition of the northwest tip of Jamaica, the western Caribbean was near normal.

January to December 2009

For the calendar year 2009 (apart from Grenada, the southern Grenadines and western Guyana), the region experienced near normal conditions. Grenada, in particular, was extremely dry. Western Guyana was moderately dry.

The maps produced used SPI values calculated from monthly rainfall totals from land stations and NCEP/NCAR reanalysis data. Only land station data is used for the eastern Caribbean, described here as from Georgetown, Guyana in the south to Anguilla in the north. The Greater (and Western) Antilles is less represented by land stations. However efforts are being made to include more land stations from that part of the region. Note that the severity implied by the index is relative to what is normal for that period of consideration. Normal in the drier season reflects less rainfall than in the wetter season.

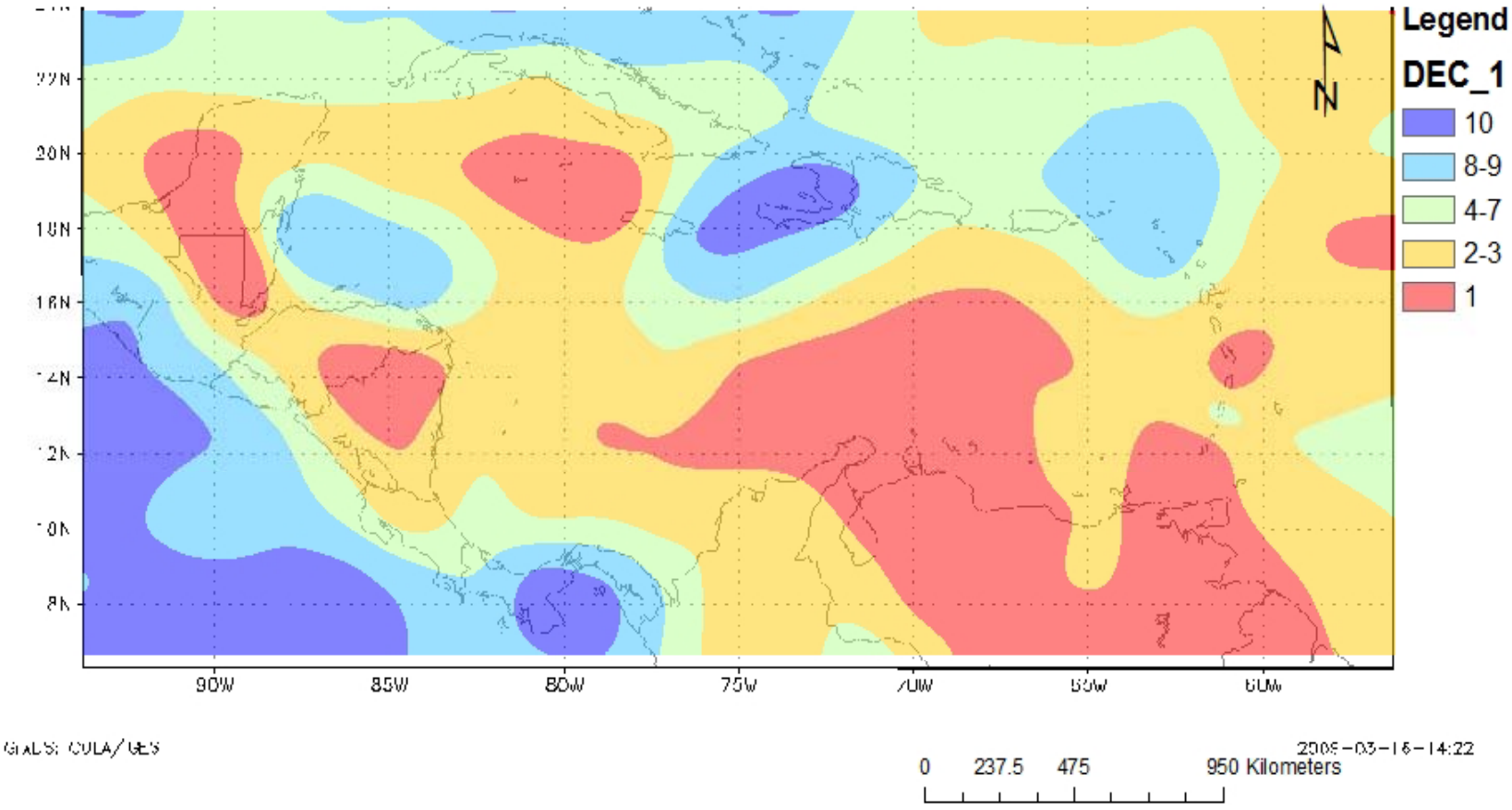
Deciles

- The distribution of occurrences is divided over a long term precipitation record into tenths of the distribution
- The first decile is the rainfall amount not exceeded by the lowest 10%

Decile Classification

- Decile 1 Very much below normal
- Decile 2-3 Below normal
- Decile 4-7 Normal
- Decile 8-9 Above normal
- Decile 10 Very much above normal

Deciles for December 2009



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THANK YOU