

Rainfall data and systematic observation for understanding Climatic Change on water resources

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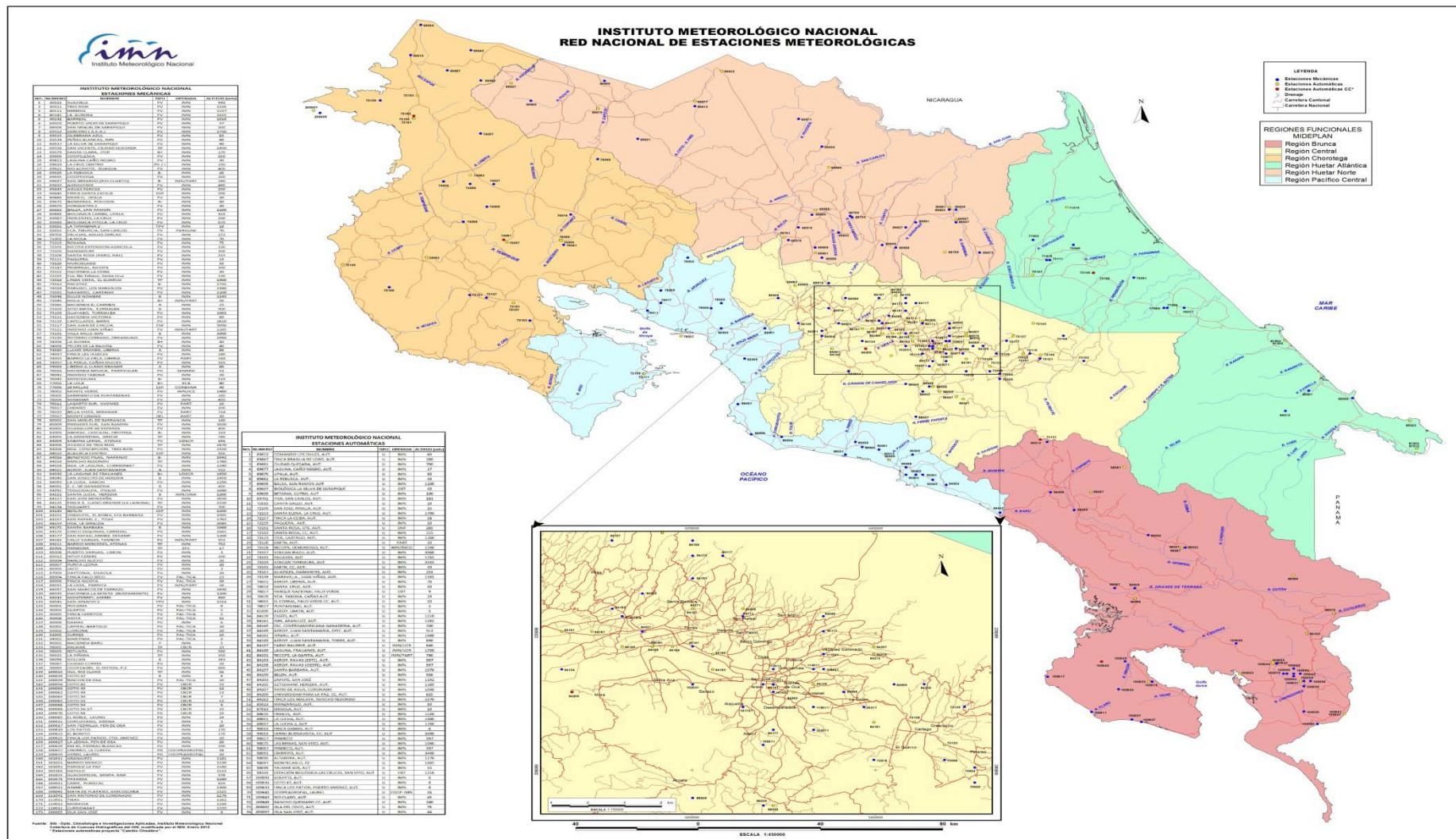
Rainfall's measuring Network



Automatic Network	stations
Telemetric	20
Satelite	5
Radio operated	15
Manual download data	41

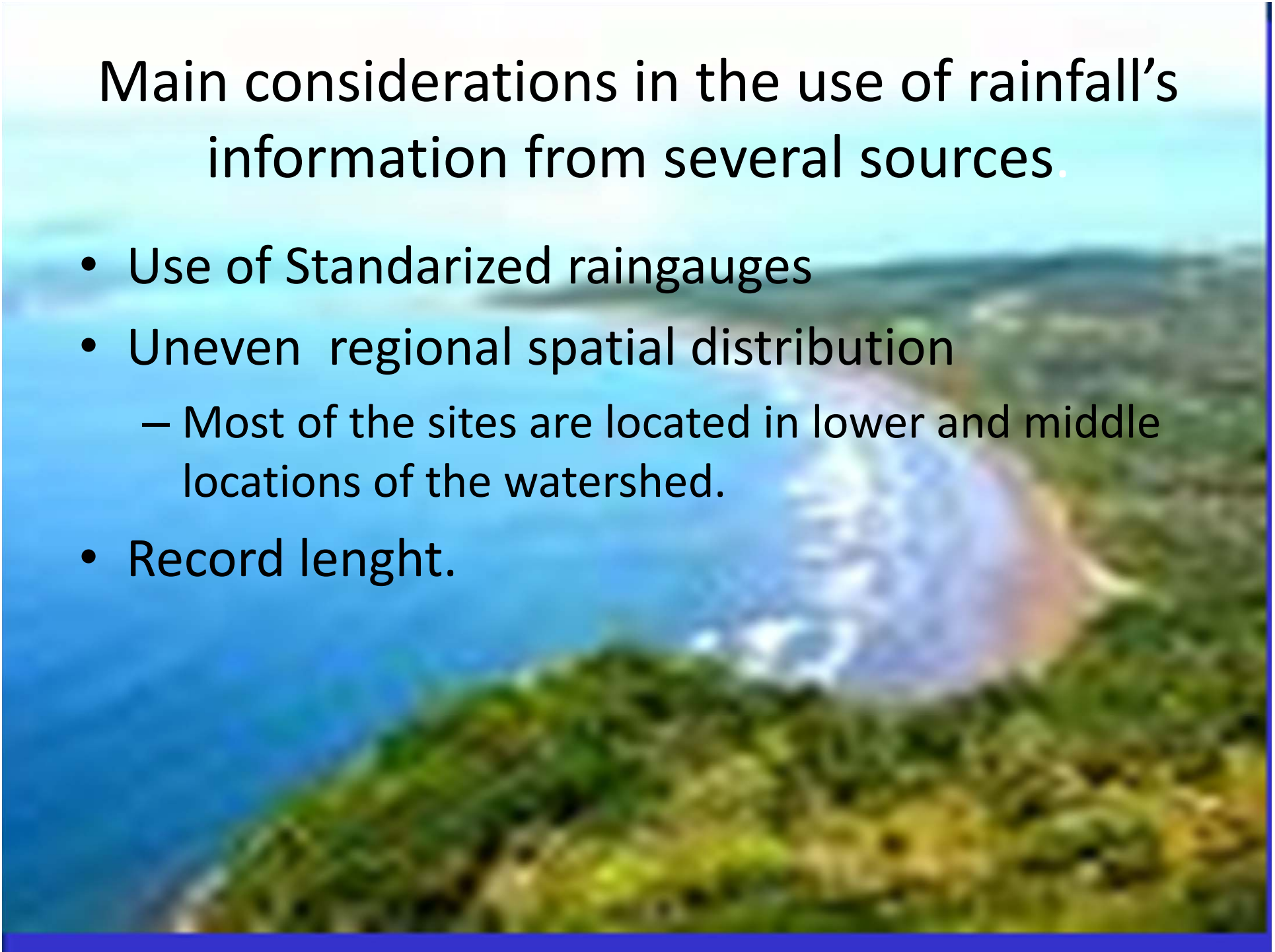
Mechanical Network	stations
Raingauges	100
Climatical complete	5
Climatical in-complete	10
thermopluiometrics	20

Rain gauge measuring network in Costa Rica

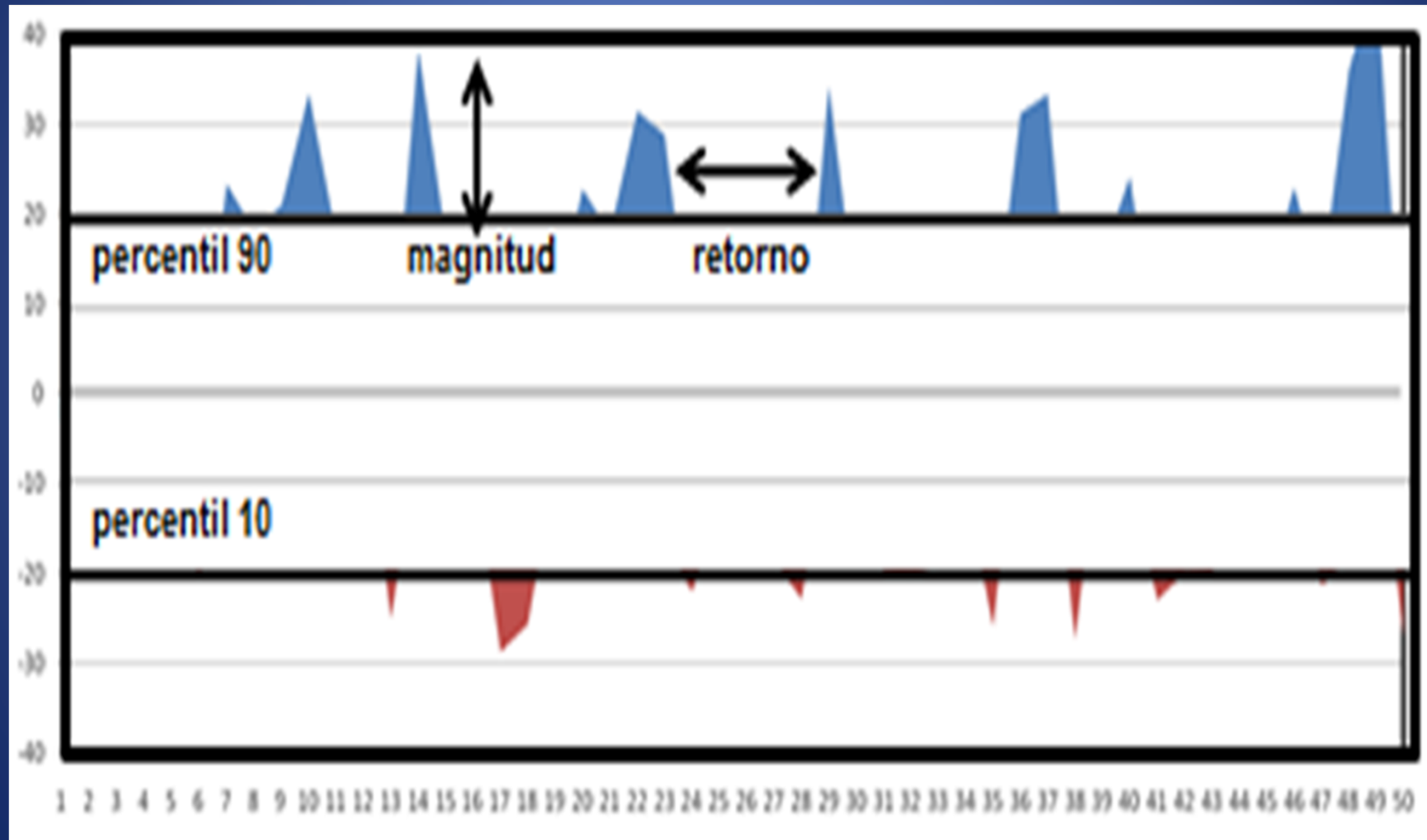


Main considerations in the use of rainfall's information from several sources.

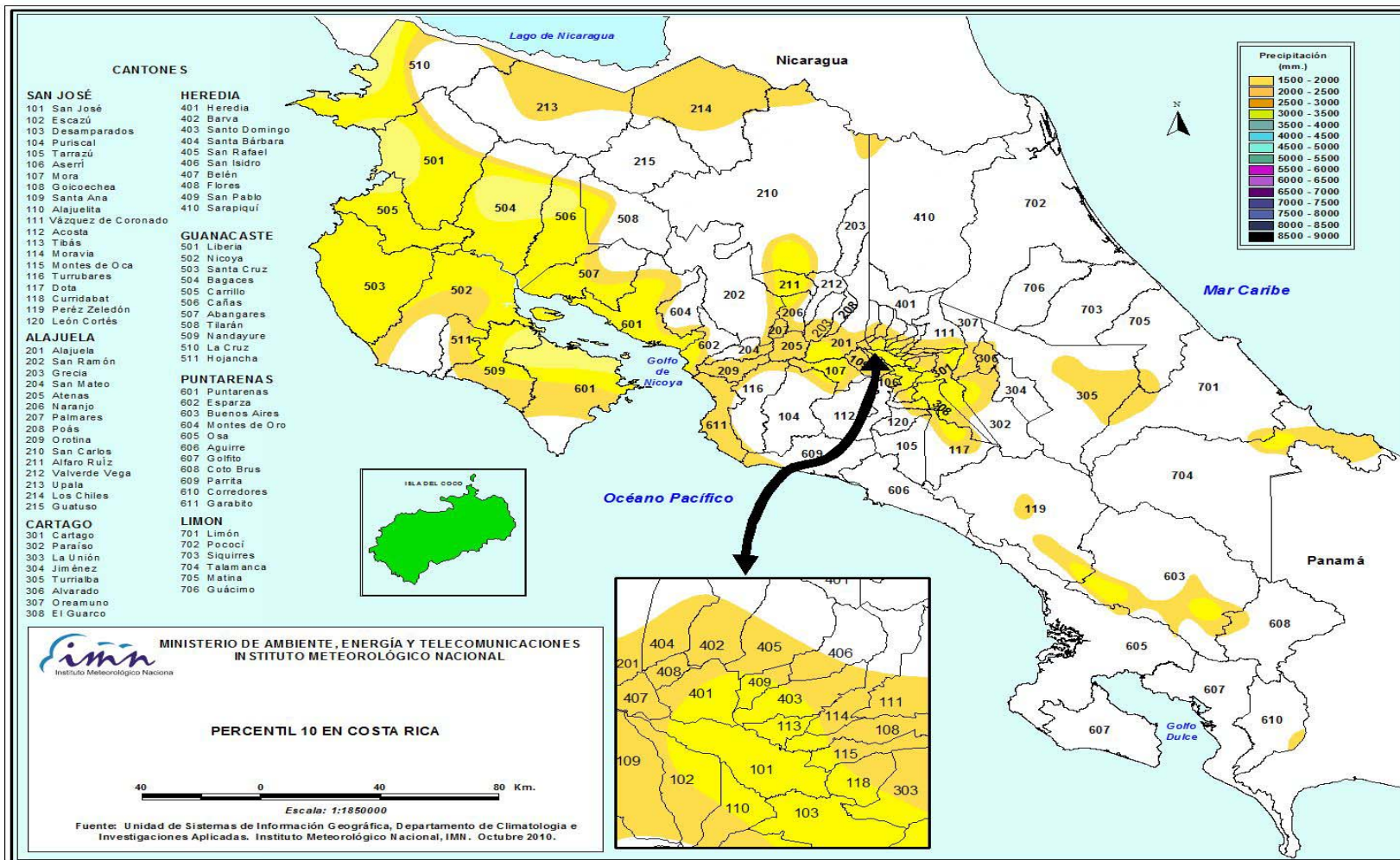
- Use of Standardized raingauges
- Uneven regional spatial distribution
 - Most of the sites are located in lower and middle locations of the watershed.
- Record lenght.



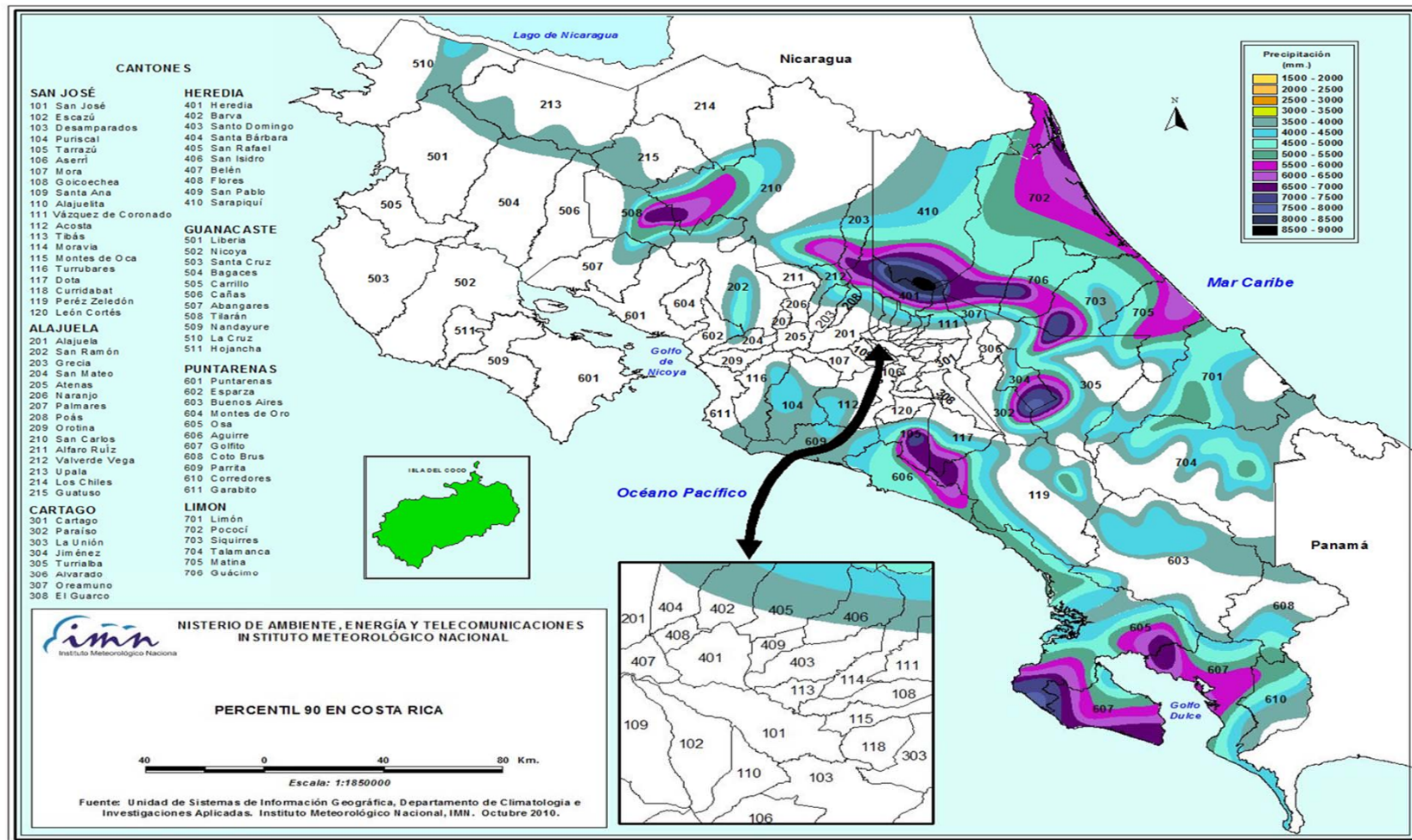
Extreme hidrometeorological events selection criteria



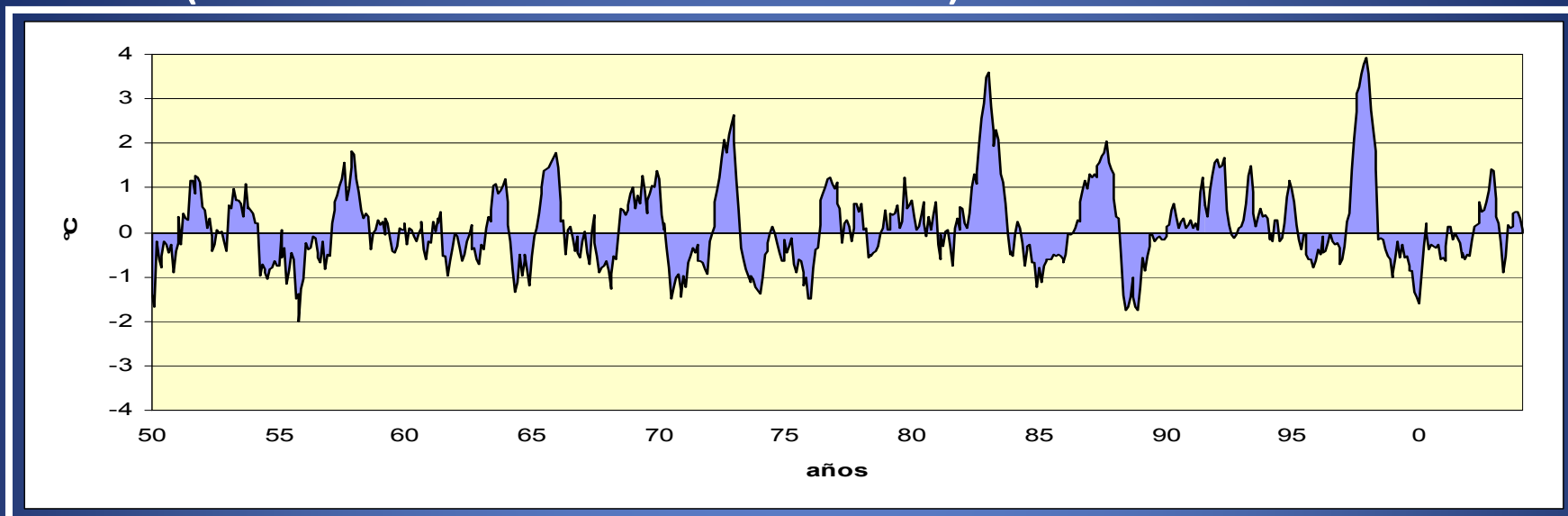
Composite map on expected severe drought scenario in Costa Rica (10 probability)



Composite Map on Expected severe flooding scenario (90 probability)



Observed Changes in the frequency of Occurrence ENSO (El Niño Southern Oscillation) in Central America



	1961-1990			1991-2007		
Phenomena	Nº cases	years	Duration (months)	Nº cases	years	Duration
El niño	8	19	15,6	7	13	13,1
La Niña	8	20	19,6	4	9	13,7

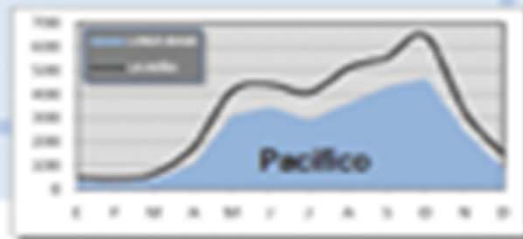
Data from Costa Rica 2nd National Communication (2008)

Behavior of La Niña's year in Costa Rica

La Niña

PACIFICO

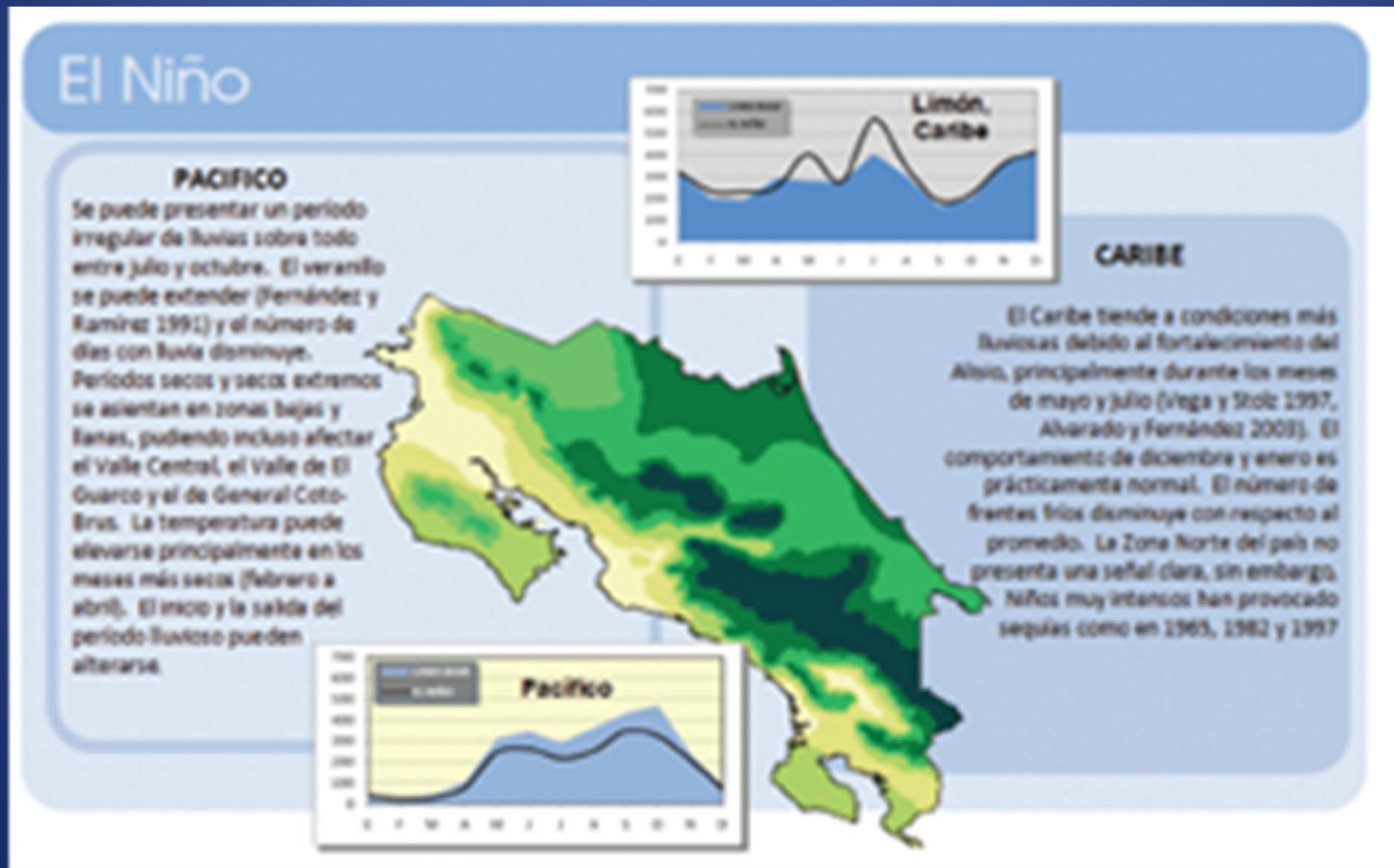
Normalmente se pueden presentar condiciones lluviosas, sobre todo en el segundo periodo de la época lluviosa, debido a una mayor frecuencia de temporales asociados a eventos ciclónicos en el mar Caribe. Según Retana et al (2001), el 80% de años la Niña han coincidido con inundaciones en el Pacífico-Norte de Costa Rica. También se ven afectadas las zonas normales de inundación.



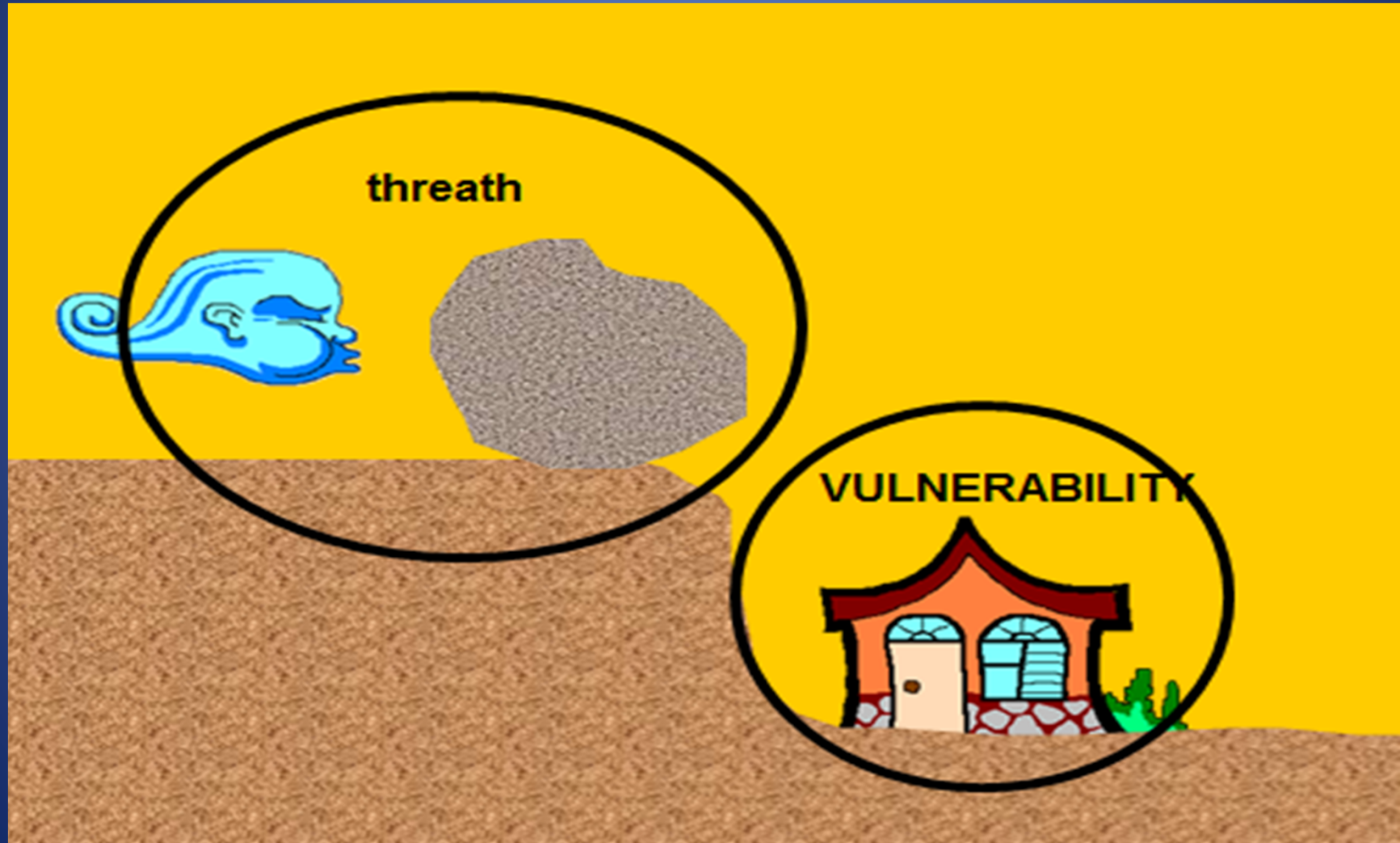
CARIBE

A pesar que el número de frentes fríos aumenta durante eventos La Niña (principalmente durante noviembre), el promedio anual de precipitación presenta valores normales o inferiores al promedio. Se observa una disminución de la lluvia durante los meses de julio, agosto y setiembre.

Behavior of El Niño's year in Costa Rica



Risk concept



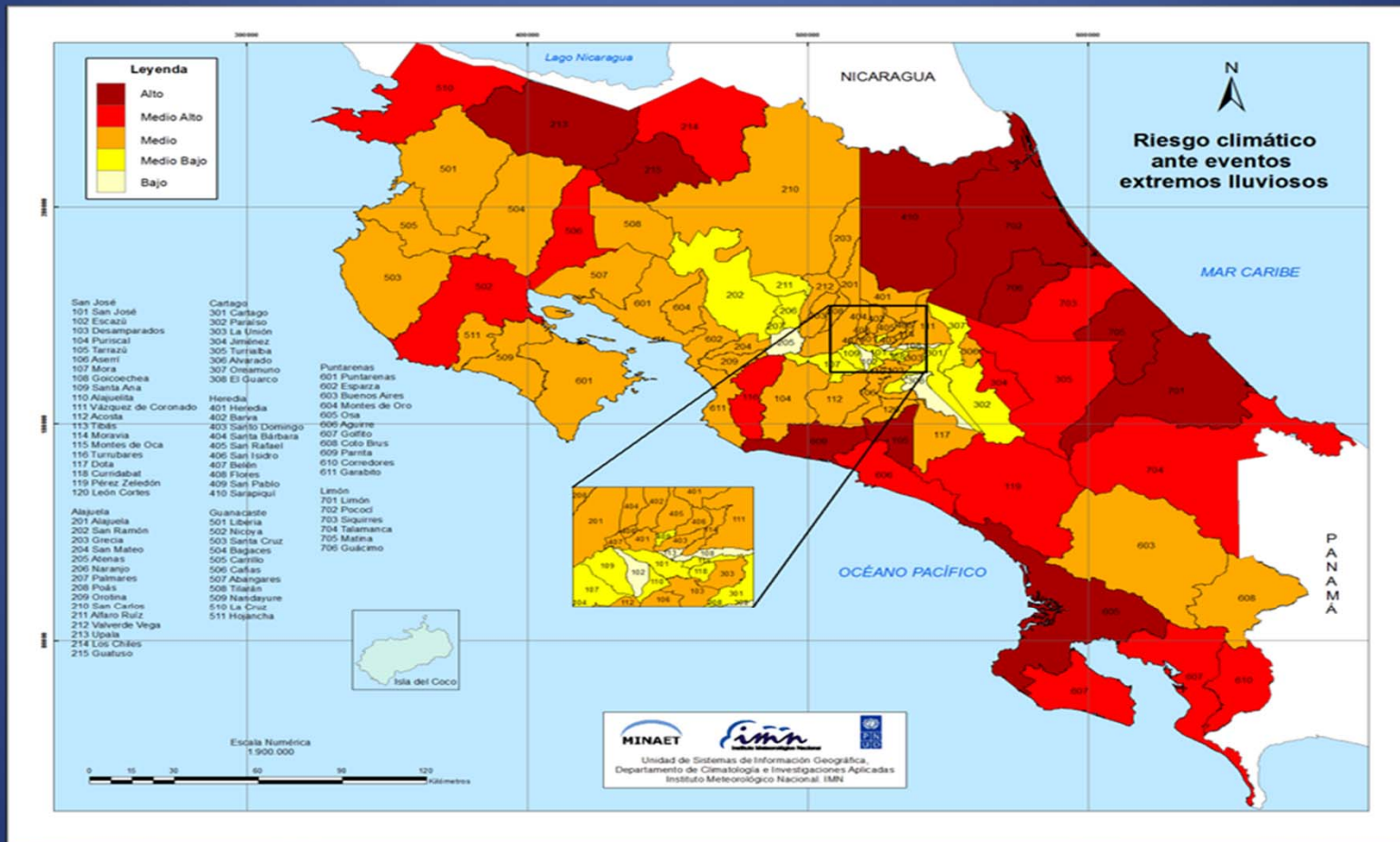
Computation of Risk's model

$$R = f(A, V)$$

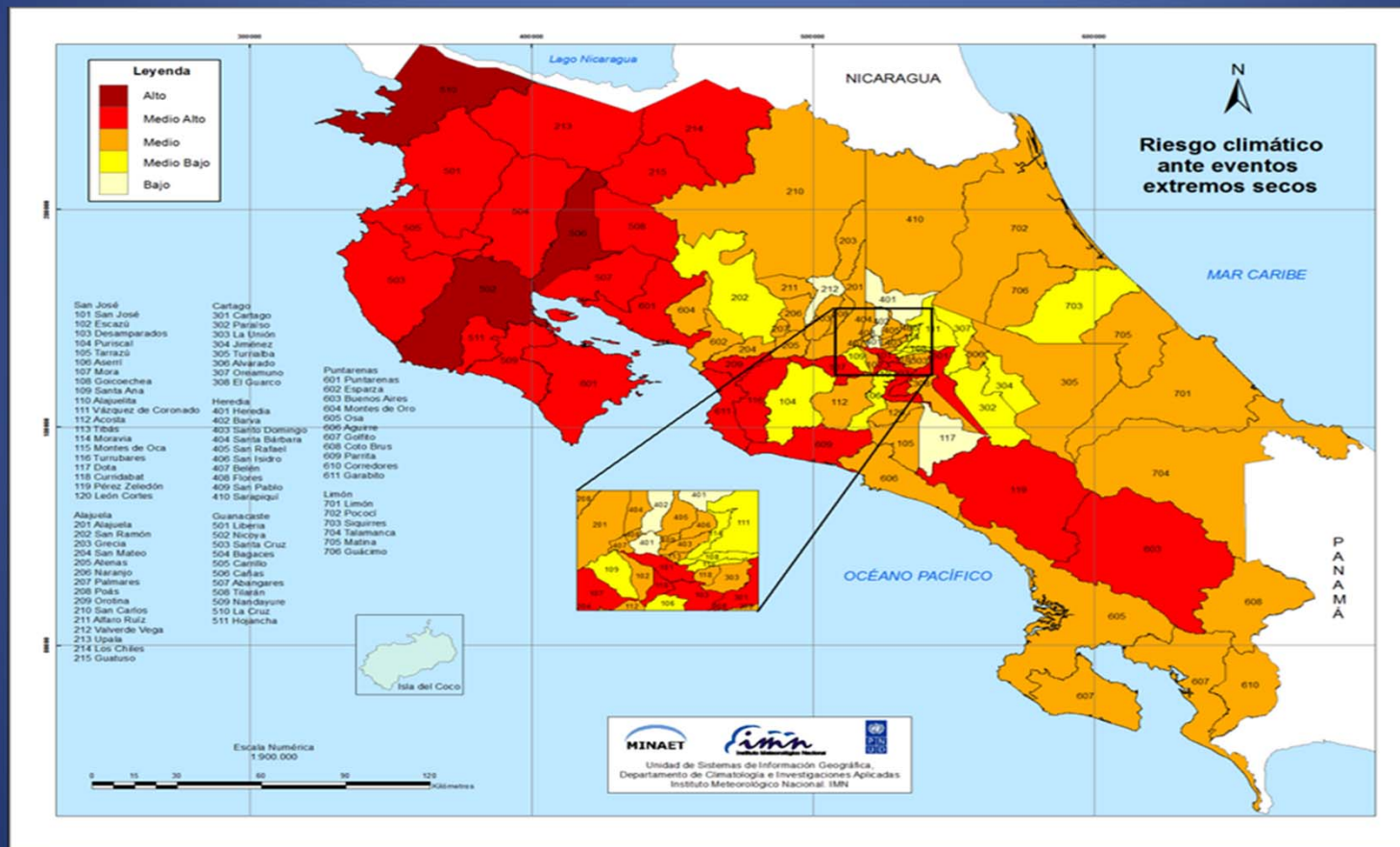
- Vulnerability
- Threat
- Risk



Risk of extreme flooding scenario



Risk of extreme Drought events



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Thank you