

MapMaker

UNL Regional Climate Modeling Facility
UNIVERSITY OF NEBRASKA–LINCOLN

Hurricane Group

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Test 1 – Average temperature

Average temperature

RCCDP MapMaker

Mesoamerica d02: Regional (12km) CCSM4_rcp85 Present-day MY01

Month(s): Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec Annual Wrap winter
[ctrl-click to clear radio buttons in menus below]

Surface Parameter	Fill	Line		
Temperature (°C)	<input checked="" type="radio"/>	<input checked="" type="radio"/>		
Precipitation (mm)	<input type="radio"/>	<input type="radio"/>		
Mean Sea-Level Pressure (hPa)	<input type="radio"/>	<input type="radio"/>		
Minimum Temperature (°C)	<input type="radio"/>	<input type="radio"/>		
Maximum Temperature (°C)	<input type="radio"/>	<input type="radio"/>		
Mixing Ratio (g kg ⁻¹)	<input type="radio"/>	<input type="radio"/>		
Relative Humidity (%)	<input type="radio"/>	<input type="radio"/>		
Surface Pressure (hPa)	<input type="radio"/>	<input type="radio"/>		
Skin temperature (°C)	<input type="radio"/>	<input type="radio"/>		
Snow Water Equivalent [SWE] (kg m ⁻²)	<input type="radio"/>	<input type="radio"/>		
Mid-month SWE (kg m ⁻²)	<input type="radio"/>	<input type="radio"/>		
U-component (m s ⁻¹)	<input type="radio"/>	<input type="radio"/>		
V-component (m s ⁻¹)	<input type="radio"/>	<input type="radio"/>		
Wind Speed (m s ⁻¹)	<input type="radio"/>	<input type="radio"/>		
Wind Vector (m s ⁻¹)	<input type="radio"/>	<input type="radio"/>		

Atmospheric Parameter	Fill	Line	Level (hPa)
Temperature (°C)	<input type="radio"/>	<input type="radio"/>	<input type="text" value=""/>
Geopotential Height (m)	<input type="radio"/>	<input type="radio"/>	<input type="text" value=""/>
Mixing Ratio (g kg ⁻¹)	<input type="radio"/>	<input type="radio"/>	<input type="text" value=""/>
Relative humidity (%)	<input type="radio"/>	<input type="radio"/>	<input type="text" value=""/>
U-component (m s ⁻¹)	<input type="radio"/>	<input type="radio"/>	<input type="text" value=""/>
V-component (m s ⁻¹)	<input type="radio"/>	<input type="radio"/>	<input type="text" value=""/>
Horizontal Wind Speed (m s ⁻¹)	<input type="radio"/>	<input type="radio"/>	<input type="text" value=""/>
Vertical Velocity (m s ⁻¹)	<input type="radio"/>	<input type="radio"/>	<input type="text" value=""/>
Wind Vector (m s ⁻¹)	<input type="radio"/>	<input type="radio"/>	<input type="text" value=""/>

Flux Parameter (at SFC, unless noted)	Fill	Line
Solar Radiation (W m ⁻²)	<input type="radio"/>	<input type="radio"/>
Downward Longwave (W m ⁻²)	<input type="radio"/>	<input type="radio"/>
Outgoing Longwave at TOA (W m ⁻²)	<input type="radio"/>	<input type="radio"/>
Ground Heat Flux (W m ⁻²)	<input type="radio"/>	<input type="radio"/>
Sensible Heat Flux (W m ⁻²)	<input type="radio"/>	<input type="radio"/>
Latent Heat Flux (W m ⁻²)	<input type="radio"/>	<input type="radio"/>
Upward Moisture Flux (kg m ⁻² s ⁻¹)	<input type="radio"/>	<input type="radio"/>

Land-surface Parameter	Fill	Line
Terrain Height (m)	<input type="radio"/>	<input type="radio"/>
Albedo	<input type="radio"/>	<input type="radio"/>
Background Albedo	<input type="radio"/>	<input type="radio"/>
Surface Emissivity	<input type="radio"/>	<input type="radio"/>
Roughness Length (m)	<input type="radio"/>	<input type="radio"/>
Vegetation Fraction	<input type="radio"/>	<input type="radio"/>
Leaf Area Index	<input type="radio"/>	<input type="radio"/>
Land Use Category	<input type="radio"/>	<input type="radio"/>
Dominant Vegetation Category	<input type="radio"/>	<input type="radio"/>
Dominant Soil Category	<input type="radio"/>	<input type="radio"/>

Soil Parameter	Fill	Line	Layer
Soil Temperature (°C)	<input type="radio"/>	<input type="radio"/>	<input type="text" value=""/>
Soil Moisture (m ³ m ⁻³)	<input type="radio"/>	<input type="radio"/>	<input type="text" value=""/>
Mid-month Soil Moisture (m ³ m ⁻³)	<input type="radio"/>	<input type="radio"/>	<input type="text" value=""/>

Plot Modifications

	Interval	Minimum	Maximum	Color(s)		Corners	Latitude	Longitude	
Fill	<input type="text" value="2"/>	<input type="text" value="-10"/>	<input type="text" value="52"/>	<input type="text" value="precip3_16lev"/>	Color Tables	Upper right:	<input type="text" value="34"/>	<input type="text" value="-85"/>	<input type="button" value="Map"/>
Line	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text" value="select or type a color name"/>	Named Colors	Lower Left:	<input type="text" value="14"/>	<input type="text" value="-122"/>	
Wind	Ref. Len.	Magnitude	Thinning	Color		Mask:	Water: <input type="radio"/>	Land: <input type="radio"/>	None: <input type="radio"/>
	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text" value="select or type a color name"/>		Output type:	PNG: <input checked="" type="radio"/>	SVG: <input type="radio"/>	
							PDF: <input type="radio"/>	PS: <input type="radio"/>	

Test 2 – Cumulative rainfall

Cumulative rainfall

RCCDP MapMaker

Mesoamerica | d02: Regional (12km) | CCSM4_rcp85 | Present-day | MY02

Month(s):
 Jan
 Feb
 Mar
 Apr
 May
 Jun
 Jul
 Aug
 Sep
 Oct
 Nov
 Dec
 Annual
 Wrap winter

[ctrl-click to clear radio buttons in menus below]

Surface Parameter	Fill	Line
Temperature (°C)	<input type="checkbox"/>	<input type="checkbox"/>
Precipitation (mm)	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Mean Sea-Level Pressure (hPa)	<input type="checkbox"/>	<input type="checkbox"/>
Minimum Temperature (°C)	<input type="checkbox"/>	<input type="checkbox"/>
Maximum Temperature (°C)	<input type="checkbox"/>	<input type="checkbox"/>
Mixing Ratio (g kg ⁻¹)	<input type="checkbox"/>	<input type="checkbox"/>
Relative Humidity (%)	<input type="checkbox"/>	<input type="checkbox"/>
Surface Pressure (hPa)	<input type="checkbox"/>	<input type="checkbox"/>
Skin temperature (°C)	<input type="checkbox"/>	<input type="checkbox"/>
Snow Water Equivalent [SWE] (kg m ⁻²)	<input type="checkbox"/>	<input type="checkbox"/>
Mid-month SWE (kg m ⁻²)	<input type="checkbox"/>	<input type="checkbox"/>
U-component (m s ⁻¹)	<input type="checkbox"/>	<input type="checkbox"/>
V-component (m s ⁻¹)	<input type="checkbox"/>	<input type="checkbox"/>
Wind Speed (m s ⁻¹)	<input type="checkbox"/>	<input type="checkbox"/>
Wind Vector (m s ⁻¹)	<input type="checkbox"/>	<input type="checkbox"/>

Atmospheric Parameter	Fill	Line	Level (hPa)
Temperature (°C)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="text"/>
Geopotential Height (m)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="text"/>
Mixing Ratio (g kg ⁻¹)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="text"/>
Relative humidity (%)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="text"/>
U-component (m s ⁻¹)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="text"/>
V-component (m s ⁻¹)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="text"/>
Horizontal Wind Speed (m s ⁻¹)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="text"/>
Vertical Velocity (m s ⁻¹)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="text"/>
Wind Vector (m s ⁻¹)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="text"/>

Flux Parameter (at SFC, unless noted)	Fill	Line
Solar Radiation (W m ⁻²)	<input type="checkbox"/>	<input type="checkbox"/>
Downward Longwave (W m ⁻²)	<input type="checkbox"/>	<input type="checkbox"/>
Outgoing Longwave at TOA (W m ⁻²)	<input type="checkbox"/>	<input type="checkbox"/>
Ground Heat Flux (W m ⁻²)	<input type="checkbox"/>	<input type="checkbox"/>
Sensible Heat Flux (W m ⁻²)	<input type="checkbox"/>	<input type="checkbox"/>
Latent Heat Flux (W m ⁻²)	<input type="checkbox"/>	<input type="checkbox"/>
Upward Moisture Flux (kg m ⁻² s ⁻¹)	<input type="checkbox"/>	<input type="checkbox"/>

Land-surface Parameter	Fill	Line
Terrain Height (m)	<input type="checkbox"/>	<input type="checkbox"/>
Albedo	<input type="checkbox"/>	<input type="checkbox"/>
Background Albedo	<input type="checkbox"/>	<input type="checkbox"/>
Surface Emissivity	<input type="checkbox"/>	<input type="checkbox"/>
Roughness Length (m)	<input type="checkbox"/>	<input type="checkbox"/>
Vegetation Fraction	<input type="checkbox"/>	<input type="checkbox"/>
Leaf Area Index	<input type="checkbox"/>	<input type="checkbox"/>
Land Use Category	<input type="checkbox"/>	<input type="checkbox"/>
Dominant Vegetation Category	<input type="checkbox"/>	<input type="checkbox"/>
Dominant Soil Category	<input type="checkbox"/>	<input type="checkbox"/>

Soil Parameter	Fill	Line	Layer
Soil Temperature (°C)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="text"/>
Soil Moisture (m ³ m ⁻³)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="text"/>
Mid-month Soil Moisture (m ³ m ⁻³)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="text"/>

Plot Modifications

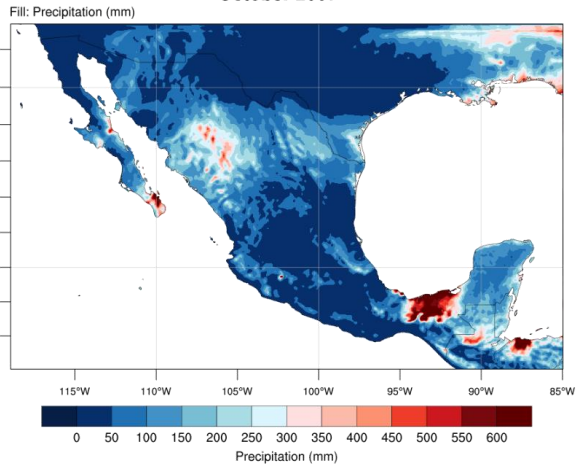
	Interval	Minimum	Maximum	Color(s)	
Fill	<input type="text" value="50"/>	<input type="text" value="0"/>	<input type="text" value="600"/>	<input type="text" value="temp_diff_18lev"/>	Color Tables
Line	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text" value="select or type a color name"/>	Named Colors
	Ref. Len.	Magnitude	Thinning	Color	
Wind	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text" value="select or type a color name"/>	

	Corners	Latitude	Longitude	
	Upper right:	<input type="text" value="34"/>	<input type="text" value="-85"/>	<input type="button" value="Map"/>
	Lower Left:	<input type="text" value="14"/>	<input type="text" value="-122"/>	
Mask:	Water: <input checked="" type="checkbox"/>	Land: <input type="checkbox"/>	None: <input type="checkbox"/>	
Output type:	PNG: <input checked="" type="checkbox"/>	SVG: <input type="checkbox"/>	PDF: <input type="checkbox"/>	PS: <input type="checkbox"/>

Comparative October/2007

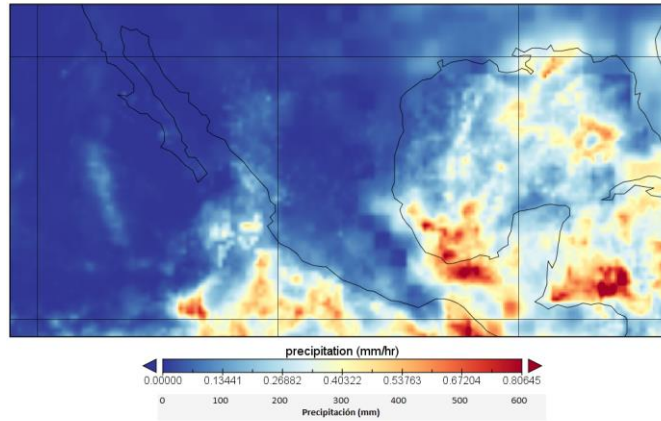
- MapMaker

CCSM4 RCP8.5
October 2007



- NASA

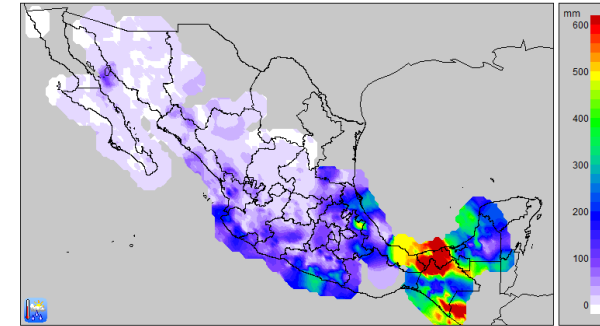
precipitation



- ERICIII



Precipitación
acumulada en
Octubre de 2007



Test 3 – Wind Speed

Tropical Cyclones September/2010

- Hermine (TT)



- Karl (H cat.III)



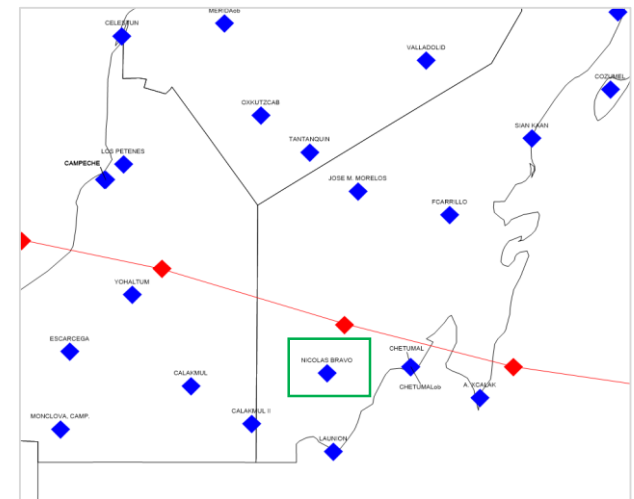
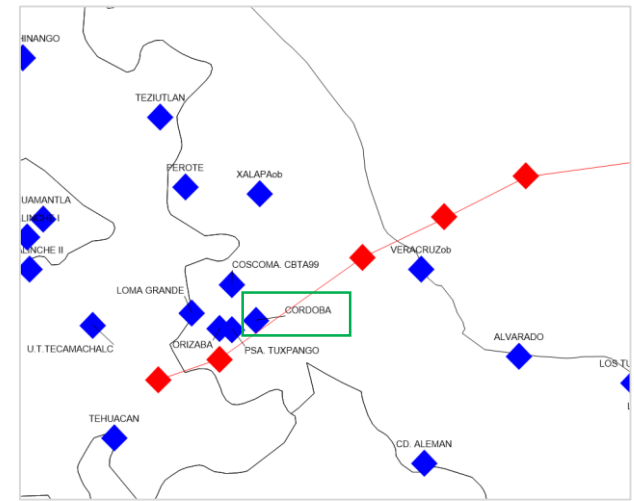
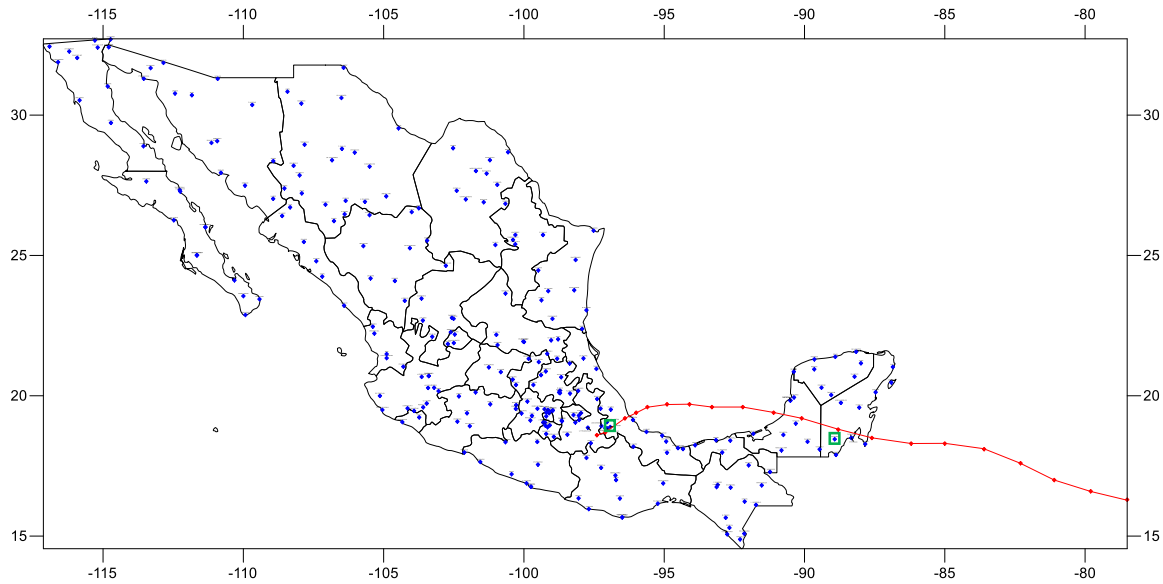
- Matthew (DT)



Cuadro resumen de ciclones tropicales 2010 en el Océano Atlántico

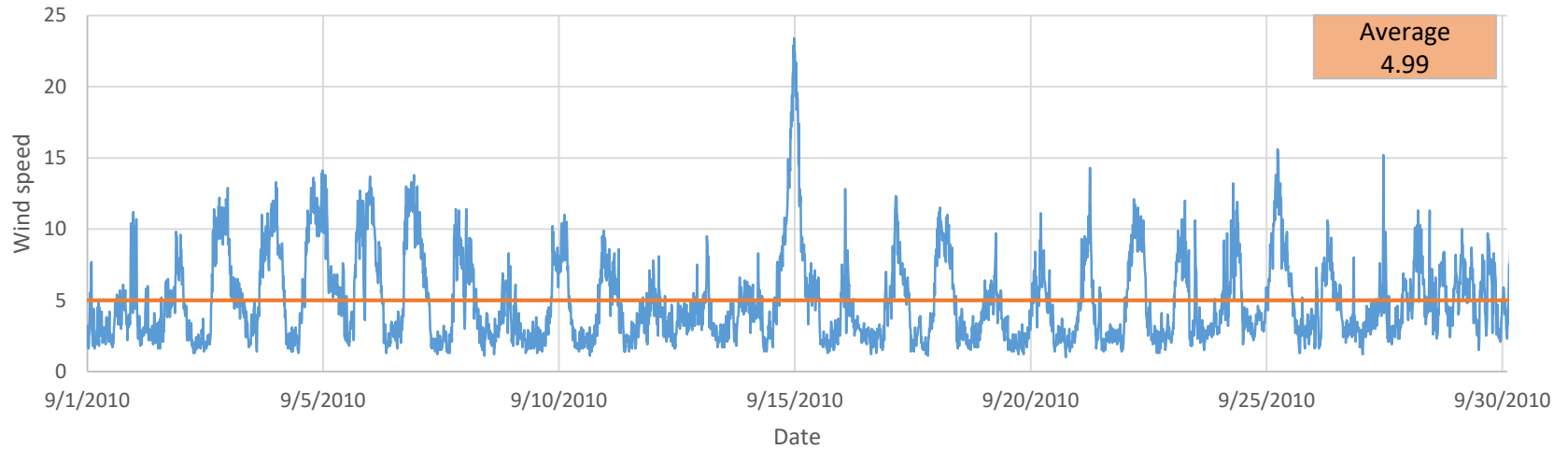
	6
Ciclones tropicales directamente sobre México	Huracán "Alex" (27-30 junio) Depresión tropical No. 2 (8 julio) TT. "Hermine" (6 sept) Huracán "Karl" (15-17 sept) Depresión tropical "Matthew" (25 sept) Depresión tropical "Richard" (25 oct)

Karl (H cat.III) September/2010

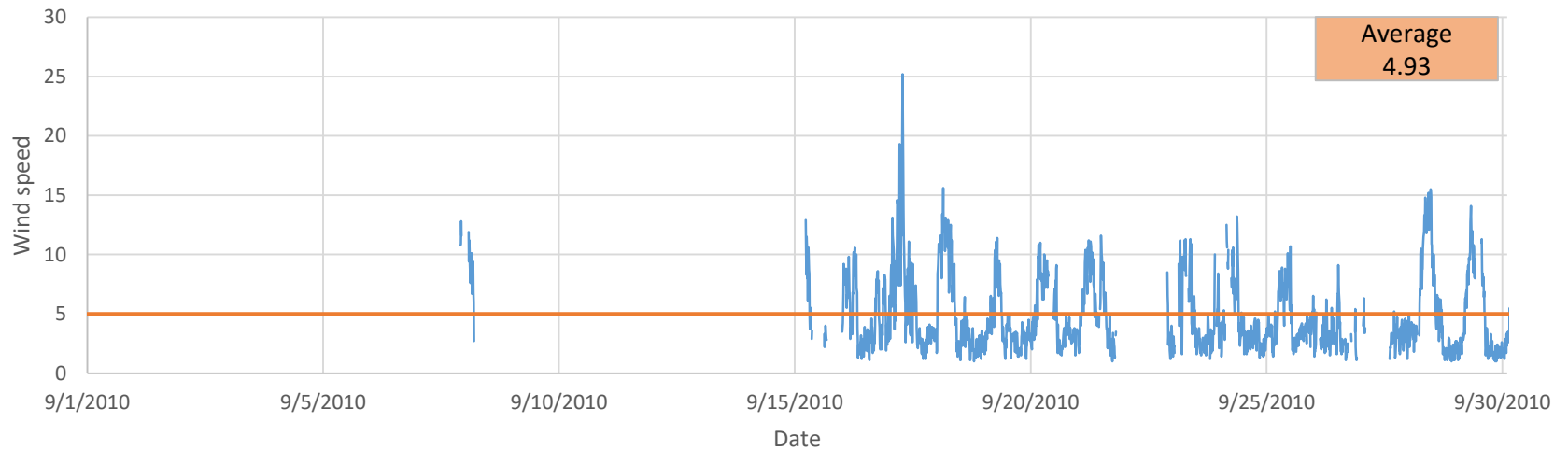


Karl (H cat.III) September/2010

Quintana Roo - Nicolas Bravo - September/2010



Veracruz- Cordoba - September/2010



Average wind speed 2010

RCCDP MapMaker

Mesoamerica | d02: Regional (12km) | CCSM4_rcp85 | Present-day | MY05

Month(s): Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec Annual Wrap winter
[ctrl-click to clear radio buttons in menus below]

<p>Surface Parameter</p> <table border="0" style="width: 100%;"> <tr> <td style="width: 80%;">Temperature (°C)</td> <td style="width: 5%;">Fill</td> <td style="width: 5%;">Line</td> </tr> <tr> <td>Precipitation (mm)</td> <td><input type="radio"/></td> <td><input type="radio"/></td> </tr> <tr> <td>Mean Sea-Level Pressure (hPa)</td> <td><input type="radio"/></td> <td><input type="radio"/></td> </tr> <tr> <td>Minimum Temperature (°C)</td> <td><input type="radio"/></td> <td><input type="radio"/></td> </tr> <tr> <td>Maximum Temperature (°C)</td> <td><input type="radio"/></td> <td><input type="radio"/></td> </tr> <tr> <td>Mixing Ratio (g kg⁻¹)</td> <td><input type="radio"/></td> <td><input type="radio"/></td> </tr> <tr> <td>Relative Humidity (%)</td> <td><input type="radio"/></td> <td><input type="radio"/></td> </tr> <tr> <td>Surface Pressure (hPa)</td> <td><input type="radio"/></td> <td><input type="radio"/></td> </tr> <tr> <td>Skin temperature (°C)</td> <td><input type="radio"/></td> <td><input type="radio"/></td> </tr> <tr> <td>Snow Water Equivalent [SWE] (kg m⁻²)</td> <td><input type="radio"/></td> <td><input type="radio"/></td> </tr> <tr> <td>Mid-month SWE (kg m⁻²)</td> <td><input type="radio"/></td> <td><input type="radio"/></td> </tr> <tr> <td>U-component (m s⁻¹)</td> <td><input type="radio"/></td> <td><input type="radio"/></td> </tr> <tr> <td>V-component (m s⁻¹)</td> <td><input type="radio"/></td> <td><input type="radio"/></td> </tr> <tr style="background-color: #ffffcc;"> <td style="background-color: #ffffcc;">Wind Speed (m s⁻¹)</td> <td style="background-color: #ffffcc;"><input checked="" type="radio"/></td> <td style="background-color: #ffffcc;"><input type="radio"/></td> </tr> <tr> <td>Wind Vector (m s⁻¹)</td> <td colspan="2"><input type="text"/></td> </tr> </table> <p>Atmospheric Parameter</p> <table border="0" style="width: 100%;"> <tr> <td style="width: 80%;">Temperature (°C)</td> <td style="width: 5%;">Fill</td> <td style="width: 5%;">Line</td> <td style="width: 10%;">Level (hPa)</td> </tr> <tr> <td>Geopotential Height (m)</td> <td><input type="radio"/></td> <td><input type="radio"/></td> <td><input type="text"/></td> </tr> <tr> <td>Mixing Ratio (g kg⁻¹)</td> <td><input type="radio"/></td> <td><input type="radio"/></td> <td><input type="text"/></td> </tr> <tr> <td>Relative humidity (%)</td> <td><input type="radio"/></td> <td><input type="radio"/></td> <td><input type="text"/></td> </tr> <tr> <td>U-component (m s⁻¹)</td> <td><input type="radio"/></td> <td><input type="radio"/></td> <td><input type="text"/></td> </tr> <tr> <td>V-component (m s⁻¹)</td> <td><input type="radio"/></td> <td><input type="radio"/></td> <td><input type="text"/></td> </tr> <tr> <td>Horizontal Wind Speed (m s⁻¹)</td> <td><input type="radio"/></td> <td><input type="radio"/></td> <td><input type="text"/></td> </tr> <tr> <td>Vertical Velocity (m s⁻¹)</td> <td><input type="radio"/></td> <td><input type="radio"/></td> <td><input type="text"/></td> </tr> <tr> <td>Wind Vector (m s⁻¹)</td> <td><input type="text"/></td> <td></td> <td><input type="text"/></td> </tr> </table>	Temperature (°C)	Fill	Line	Precipitation (mm)	<input type="radio"/>	<input type="radio"/>	Mean Sea-Level Pressure (hPa)	<input type="radio"/>	<input type="radio"/>	Minimum Temperature (°C)	<input type="radio"/>	<input type="radio"/>	Maximum Temperature (°C)	<input type="radio"/>	<input type="radio"/>	Mixing Ratio (g kg ⁻¹)	<input type="radio"/>	<input type="radio"/>	Relative Humidity (%)	<input type="radio"/>	<input type="radio"/>	Surface Pressure (hPa)	<input type="radio"/>	<input type="radio"/>	Skin temperature (°C)	<input type="radio"/>	<input type="radio"/>	Snow Water Equivalent [SWE] (kg m ⁻²)	<input type="radio"/>	<input type="radio"/>	Mid-month SWE (kg m ⁻²)	<input type="radio"/>	<input type="radio"/>	U-component (m s ⁻¹)	<input type="radio"/>	<input type="radio"/>	V-component (m s ⁻¹)	<input type="radio"/>	<input type="radio"/>	Wind Speed (m s ⁻¹)	<input checked="" type="radio"/>	<input type="radio"/>	Wind Vector (m s ⁻¹)	<input type="text"/>		Temperature (°C)	Fill	Line	Level (hPa)	Geopotential Height (m)	<input type="radio"/>	<input type="radio"/>	<input type="text"/>	Mixing Ratio (g kg ⁻¹)	<input type="radio"/>	<input type="radio"/>	<input type="text"/>	Relative humidity (%)	<input type="radio"/>	<input type="radio"/>	<input type="text"/>	U-component (m s ⁻¹)	<input type="radio"/>	<input type="radio"/>	<input type="text"/>	V-component (m s ⁻¹)	<input type="radio"/>	<input type="radio"/>	<input type="text"/>	Horizontal Wind Speed (m s ⁻¹)	<input type="radio"/>	<input type="radio"/>	<input type="text"/>	Vertical Velocity (m s ⁻¹)	<input type="radio"/>	<input type="radio"/>	<input type="text"/>	Wind Vector (m s ⁻¹)	<input type="text"/>		<input type="text"/>	<p>Flux Parameter (at SFC, unless noted)</p> <table border="0" style="width: 100%;"> <tr> <td style="width: 80%;">Solar Radiation (W m⁻²)</td> <td style="width: 5%;">Fill</td> <td style="width: 5%;">Line</td> </tr> <tr> <td>Downward Longwave (W m⁻²)</td> <td><input type="radio"/></td> <td><input type="radio"/></td> </tr> <tr> <td>Outgoing Longwave at TOA (W m⁻²)</td> <td><input type="radio"/></td> <td><input type="radio"/></td> </tr> <tr> <td>Ground Heat Flux (W m⁻²)</td> <td><input type="radio"/></td> <td><input type="radio"/></td> </tr> <tr> <td>Sensible Heat Flux (W m⁻²)</td> <td><input type="radio"/></td> <td><input type="radio"/></td> </tr> <tr> <td>Latent Heat Flux (W m⁻²)</td> <td><input type="radio"/></td> <td><input type="radio"/></td> </tr> <tr> <td>Upward Moisture Flux (kg m⁻² s⁻¹)</td> <td><input type="radio"/></td> <td><input type="radio"/></td> </tr> </table> <hr/> <p>Land-surface Parameter</p> <table border="0" style="width: 100%;"> <tr> <td style="width: 80%;">Terrain Height (m)</td> <td style="width: 5%;">Fill</td> <td style="width: 5%;">Line</td> </tr> <tr> <td>Albedo</td> <td><input type="radio"/></td> <td><input type="radio"/></td> </tr> <tr> <td>Background Albedo</td> <td><input type="radio"/></td> <td><input type="radio"/></td> </tr> <tr> <td>Surface Emissivity</td> <td><input type="radio"/></td> <td><input type="radio"/></td> </tr> <tr> <td>Roughness Length (m)</td> <td><input type="radio"/></td> <td><input type="radio"/></td> </tr> <tr> <td>Vegetation Fraction</td> <td><input type="radio"/></td> <td><input type="radio"/></td> </tr> <tr> <td>Leaf Area Index</td> <td><input type="radio"/></td> <td><input type="radio"/></td> </tr> <tr> <td>Land Use Category</td> <td><input type="radio"/></td> <td>index</td> </tr> <tr> <td>Dominant Vegetation Category</td> <td><input type="radio"/></td> <td>index</td> </tr> <tr> <td>Dominant Soil Category</td> <td><input type="radio"/></td> <td>index</td> </tr> </table> <hr/> <p>Soil Parameter</p> <table border="0" style="width: 100%;"> <tr> <td style="width: 80%;">Soil Temperature (°C)</td> <td style="width: 5%;">Fill</td> <td style="width: 5%;">Line</td> <td style="width: 10%;">Layer</td> </tr> <tr> <td>Soil Moisture (m³ m⁻³)</td> <td><input type="radio"/></td> <td><input type="radio"/></td> <td><input type="text"/></td> </tr> <tr> <td>Mid-month Soil Moisture (m³ m⁻³)</td> <td><input type="radio"/></td> <td><input type="radio"/></td> <td><input type="text"/></td> </tr> </table>	Solar Radiation (W m ⁻²)	Fill	Line	Downward Longwave (W m ⁻²)	<input type="radio"/>	<input type="radio"/>	Outgoing Longwave at TOA (W m ⁻²)	<input type="radio"/>	<input type="radio"/>	Ground Heat Flux (W m ⁻²)	<input type="radio"/>	<input type="radio"/>	Sensible Heat Flux (W m ⁻²)	<input type="radio"/>	<input type="radio"/>	Latent Heat Flux (W m ⁻²)	<input type="radio"/>	<input type="radio"/>	Upward Moisture Flux (kg m ⁻² s ⁻¹)	<input type="radio"/>	<input type="radio"/>	Terrain Height (m)	Fill	Line	Albedo	<input type="radio"/>	<input type="radio"/>	Background Albedo	<input type="radio"/>	<input type="radio"/>	Surface Emissivity	<input type="radio"/>	<input type="radio"/>	Roughness Length (m)	<input type="radio"/>	<input type="radio"/>	Vegetation Fraction	<input type="radio"/>	<input type="radio"/>	Leaf Area Index	<input type="radio"/>	<input type="radio"/>	Land Use Category	<input type="radio"/>	index	Dominant Vegetation Category	<input type="radio"/>	index	Dominant Soil Category	<input type="radio"/>	index	Soil Temperature (°C)	Fill	Line	Layer	Soil Moisture (m ³ m ⁻³)	<input type="radio"/>	<input type="radio"/>	<input type="text"/>	Mid-month Soil Moisture (m ³ m ⁻³)	<input type="radio"/>	<input type="radio"/>	<input type="text"/>
Temperature (°C)	Fill	Line																																																																																																																																															
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Plot Modifications

	Interval	Minimum	Maximum	Color(s)		Corners	Latitude	Longitude
Fill	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text" value="precip2_17lev"/> Color Tables		Upper right:	<input type="text" value="34"/>	<input type="text" value="-85"/>
Line	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text" value="select or type a color name"/> Named Colors		Lower Left:	<input type="text" value="14"/>	<input type="text" value="-122"/>
	Ref. Len.	Magnitude	Thinning	Color		Mask:	Water: <input checked="" type="radio"/>	Land: <input type="radio"/>
Wind	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text" value="select or type a color name"/>		Output type:	PNG: <input checked="" type="radio"/>	SVG: <input type="radio"/>
							PDF: <input type="radio"/>	PS: <input type="radio"/>

Average wind speed 2060

RCCDP MapMaker

Mesoamerica | d02: Regional (12km) | CCSM4_rcp85 | Mid-century | MY55

Month(s):
 Jan
 Feb
 Mar
 Apr
 May
 Jun
 Jul
 Aug
 Sep
 Oct
 Nov
 Dec
 Annual
 Wrap winter

[ctrl-click to clear radio buttons in menus below]

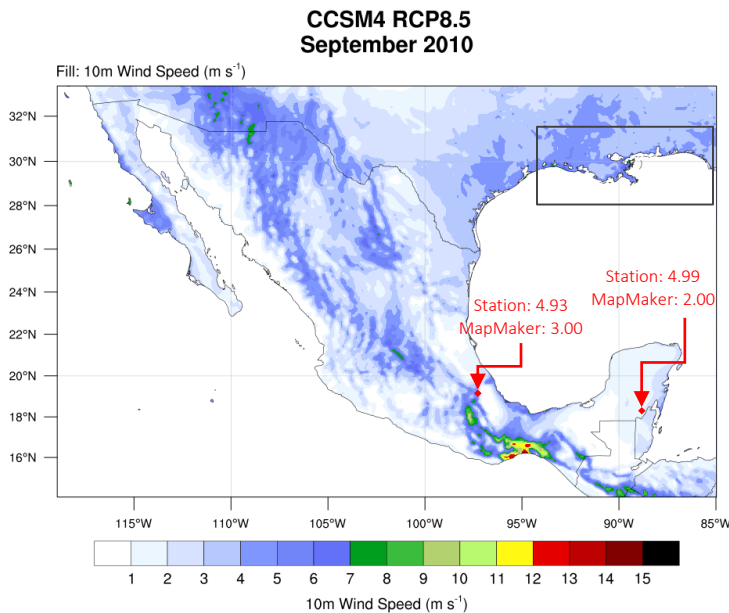
<table border="0" style="width: 100%;"> <tr> <th style="text-align: left;">Surface Parameter</th> <th style="text-align: center;">Fill</th> <th style="text-align: center;">Line</th> </tr> <tr><td>Temperature (°C)</td><td style="text-align: center;"><input type="radio"/></td><td style="text-align: center;"><input type="radio"/></td></tr> <tr><td>Precipitation (mm)</td><td style="text-align: center;"><input type="radio"/></td><td style="text-align: center;"><input type="radio"/></td></tr> <tr><td>Mean Sea-Level Pressure (hPa)</td><td style="text-align: center;"><input type="radio"/></td><td style="text-align: center;"><input type="radio"/></td></tr> <tr><td>Minimum Temperature (°C)</td><td style="text-align: center;"><input type="radio"/></td><td style="text-align: center;"><input type="radio"/></td></tr> <tr><td>Maximum Temperature (°C)</td><td style="text-align: center;"><input type="radio"/></td><td style="text-align: center;"><input type="radio"/></td></tr> <tr><td>Mixing Ratio (g 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Soil Moisture (m ³ m ⁻³)	<input type="radio"/>	<input type="radio"/>	<input type="text"/>																																																																																																																																																															
Mid-month Soil Moisture (m ³ m ⁻³)	<input type="radio"/>	<input type="radio"/>	<input type="text"/>																																																																																																																																																															

Plot Modifications

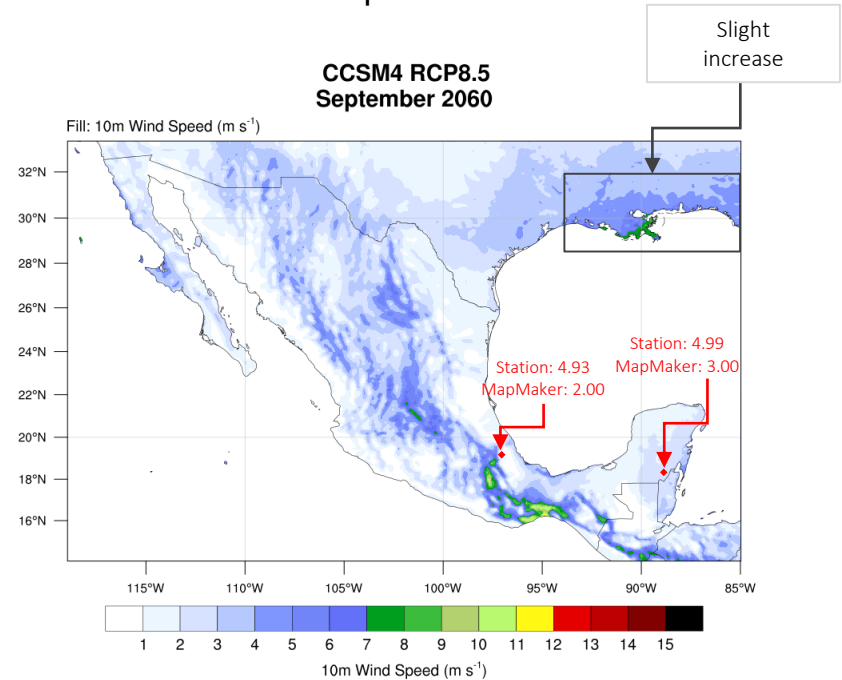
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Fill	<input type="text" value="1"/>	<input type="text" value="1"/>	<input type="text" value="15"/>	<input type="text" value="precip2_17lev"/>	Color Tables	Upper right:	<input type="text" value="34"/>	<input type="text" value="-85"/>	<input type="button" value="Map"/>
Line	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text" value="select or type a color name"/>	Named Colors	Lower Left:	<input type="text" value="14"/>	<input type="text" value="-122"/>	
Wind	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text" value="select or type a color name"/>		Mask:	Water: <input checked="" type="radio"/>	Land: <input type="radio"/>	None: <input type="radio"/>
						Output type:	PNG: <input checked="" type="radio"/>	SVG: <input type="radio"/>	
							PDF: <input type="radio"/>	PS: <input type="radio"/>	

Comparative September/2010 – September/2060 (d02)

- MapMaker 2010



- MapMaker 2060



Cuadro resumen de ciclones tropicales 2010 en el Océano Atlántico

Ciclones tropicales directamente sobre México

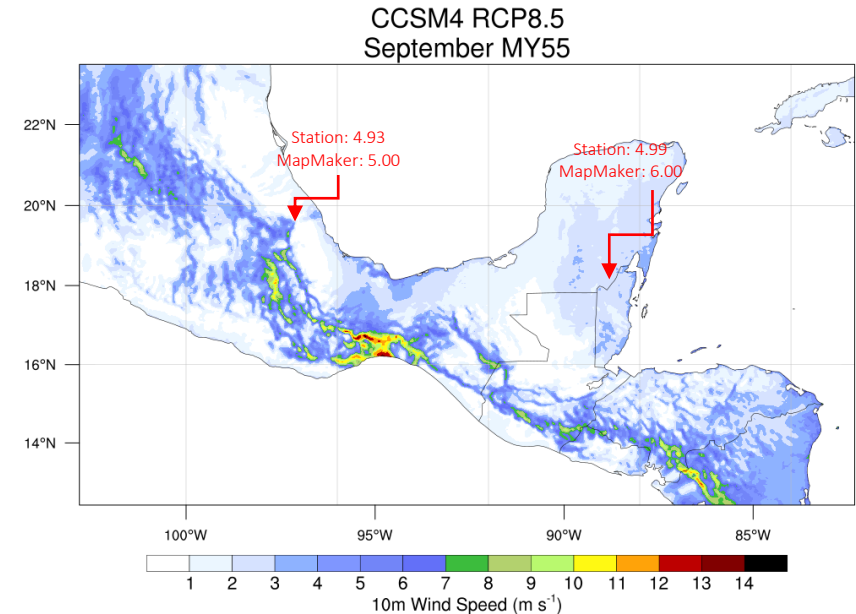
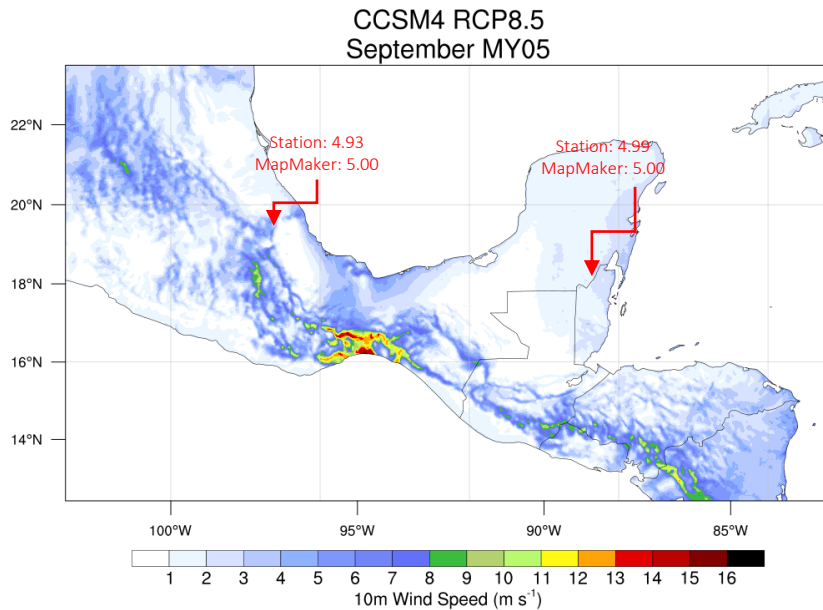
6

Huracán "Alex" (27-30 junio)
 Depresión tropical No. 2 (8 julio)
 TT. "Hermine" (6 sept)
 Huracán "Karl" (15-17 sept)
 Depresión tropical "Matthew" (25 sept)
 Depresión tropical "Richard" (25 oct)

Comparative September/2010 – September/2060 (d03)

- MapMaker 2010

- MapMaker 2060



Cuadro resumen de ciclones tropicales 2010 en el Océano Atlántico

Ciclones tropicales directamente sobre México

6

Huracán "Alex" (27-30 junio)
Depresión tropical No. 2 (8 julio)
TT. "Hermine" (6 sept)
Huracán "Karl" (15-17 sept)
Depresión tropical "Matthew" (25 sept)
Depresión tropical "Richard" (25 oct)

Methods for Detection of TCs

Methods for Detection of TCs (Bengtsson, Oouchi, Gualdi and Zhao)

For tropical cyclones, Gray has proposed a criterion which reproduces the geographical repartition of their seasonal frequency occurrence in the current climate. Gray (1979) related this seasonal tropical cyclone frequency to a combination of six seasonal genesis parameters divided in two groups, three dynamical variables (Lower-tropospheric relative vorticity, Coriolis parameter and vertical wind-shear) and three thermodynamical variables (ocean thermal energy, humidity and moist instability of lower atmosphere) computed from seasonally (3-months) averaged large scale field.

Bengtsson (1995) and Walsh(1997) propose thresholds for following parameters:

- 1) Relative Vorticity, 2) Minimum surface pressure, 3) Temperature anomalies,
- 4) Ratio at 300 hPa and 850 hPa, 5)Wind speed and 6)Duration of the event

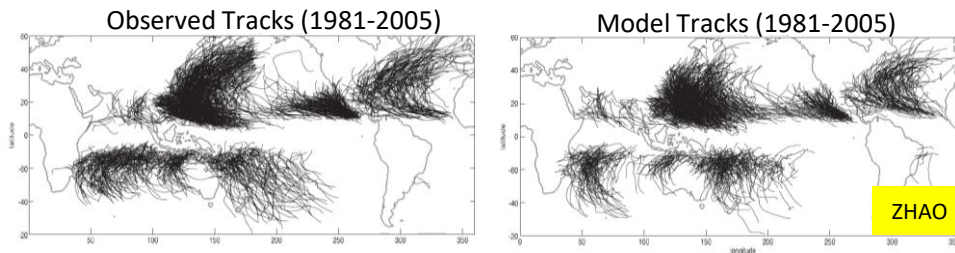
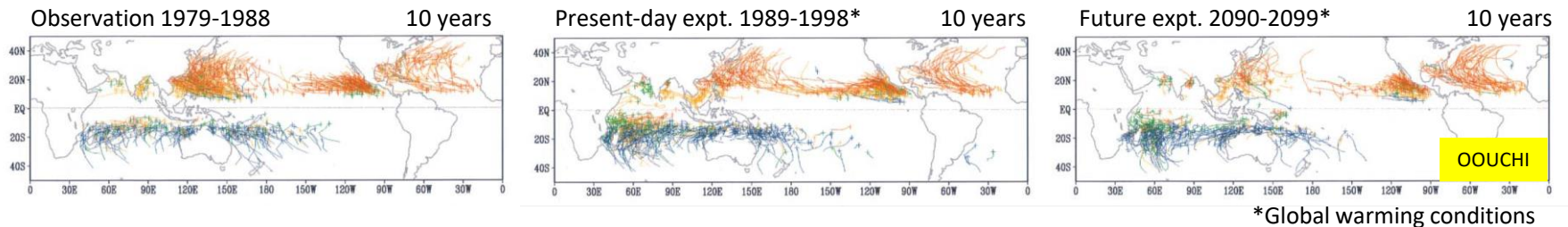
PARAMETER	BENGTSSON (1996)	OOUCHI (2006)	GUALDI (2008)	ZHAO (2009)
Vorticity	Relative vorticity at 850 hPa $> 3.5 \times 10^{-5} \text{ s}^{-1}$	The magnitude of the maximum relative vorticity at 850 hPa exceeds $3.5 \times 10^{-5} \text{ s}^{-1}$	In A, relative vorticity at 850 hPa is $>3 \times 10^{-5} \text{ s}^{-1}$	At each time, 850-hPa relative vorticity maximum exceeding $1.6 \times 10^{-4} \text{ s}^{-1}$ are located within areas of $6^\circ \times 6^\circ$ latitude and longitude.
Minimum surface pressure	A maximum velocity of 15 m s^{-1} and a minimum surface pressure within a 7x7 grid point area around the point which fulfils condition 1.	Across the 45S–45N latitudinal belt, the grid point corresponding to a TC-center candidate was defined as the one where the minimum surface pressure is at least 2 hPa lower than the mean surface pressure over the surrounding $7^\circ \times 7^\circ$ grid box.	There is a relative minimum surface pressure and wind velocity $> 14 \text{ m s}^{-1}$ in an area of 2.25° around A	The local minimum of sea level pressure, which must be within a distance of 2° latitude or longitude from the vorticity maximum, is defined as the center of the storm. And the local maximum surface (lowest model level) wind speed is recorded.

Identification algorithms of TCs

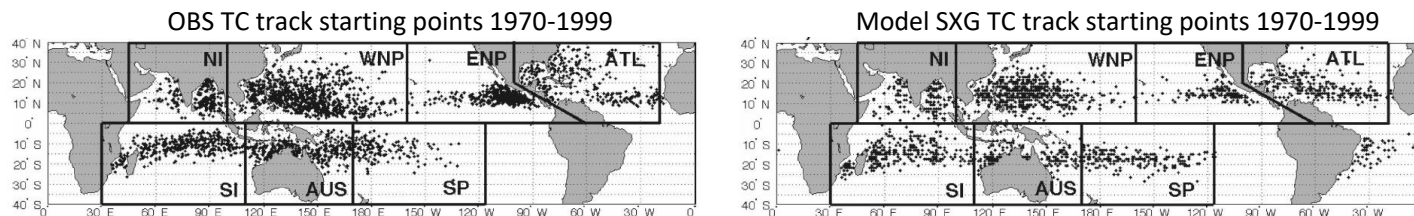
Bengtsson, Oouchi, Gualdi and Zhao

PARAMETER	BENGTSSON (1996)	OOUCHI (2006)	GUALDI (2008)	ZHAO (2009)
Temperature anomalies	The sum of the temperature anomalies for the levels 700, 500 and 300 hPa $> 3^{\circ}\text{C}$	The temperature structure aloft has a marked warm core such that the sum of the temperature deviations at 300, 500 and 700 hPa exceeds 2°K .	The sum of temperature anomalies at 700, 500, and 300hPa is $>2^{\circ}\text{K}$, where the anomalies are defined as the deviation from a spatial mean computed over an area of 13 grid points in the east–west and 2 grid points in the north–south direction	The local maximum temperature averaged between 300 and 500 hPa is defined as the center of the warm core. The distance of the warm-core center from the storm center must not exceed 2° . The warm-core temperature must be at least 1°C warmer than the surrounding local mean.
Ratio at 300 hPa and 850 hPa	The temperature anomaly at 300 hPa $>$ temperature anomaly at 850 hPa	The maximum wind speed at 850 hPa is larger than that at 300 hPa	The temperature anomaly at 300 hPa is greater than the temperature anomaly at 850 hPa	
Wind speed	The mean wind speed at 850 hPa $>$ mean wind speed at 300 hPa.	The maximum wind speed at 850 hPa is larger than 15 m s^{-1}	The wind velocity at 850 hPa is $>$ wind velocity at 300 hPa	
Duration of the event	Minimum duration of the event ≥ 1.5 days	The duration is not shorter than 36 hours	The above conditions persist for a period longer than 1.5 days	

- Several authors (OOUCHI, 2006 and ZHAO, 2009) have performed simulations of tropical cyclones with good results.



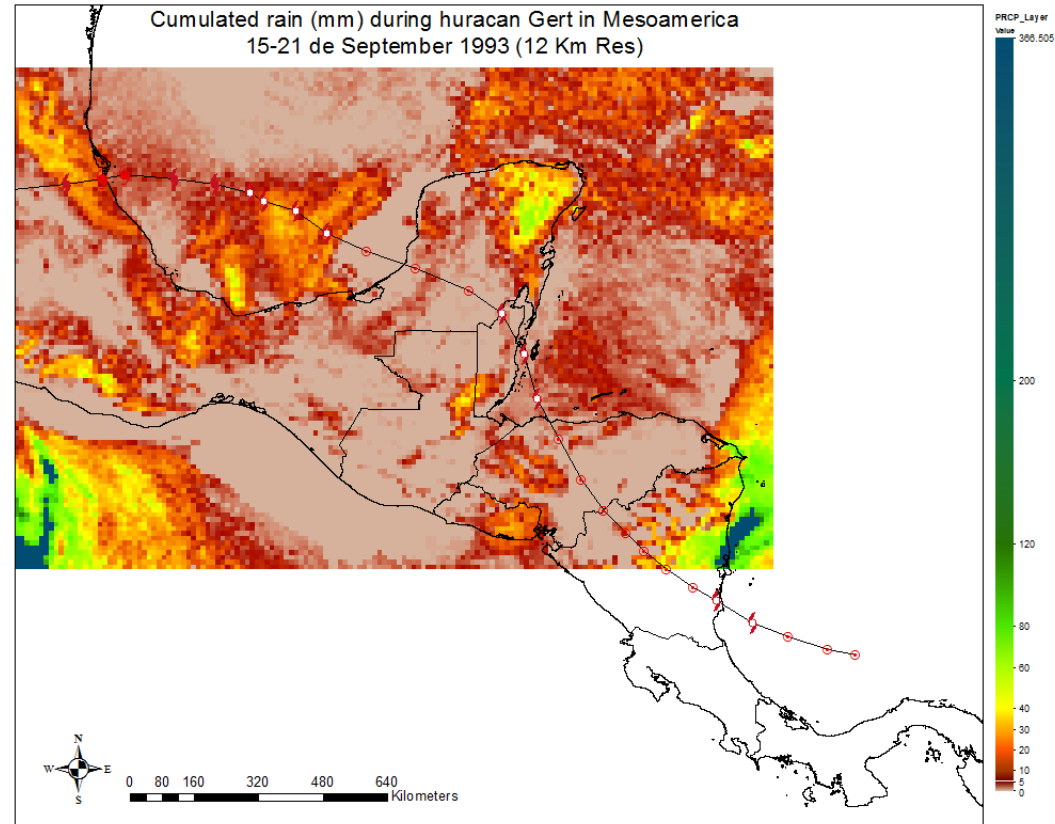
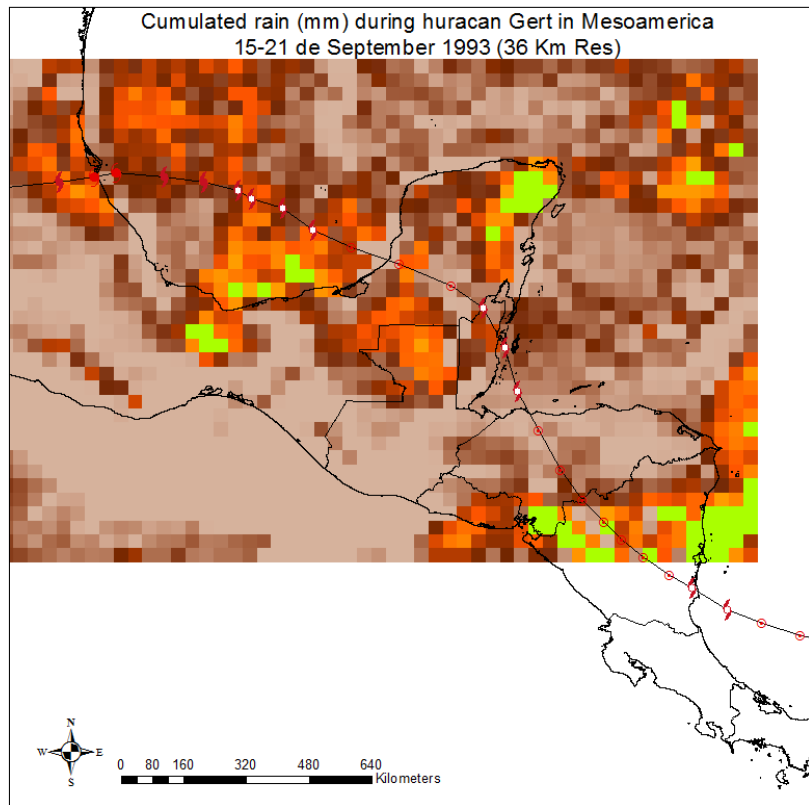
- Gualdi, 2008, has analyzed the changes in the activity of tropical cyclones due to global warming.



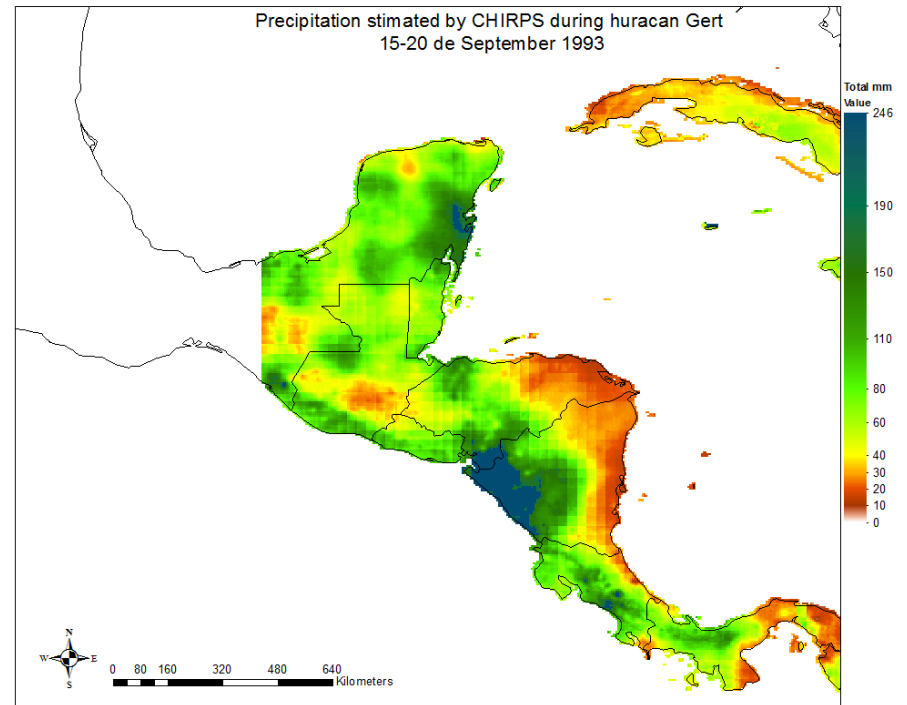
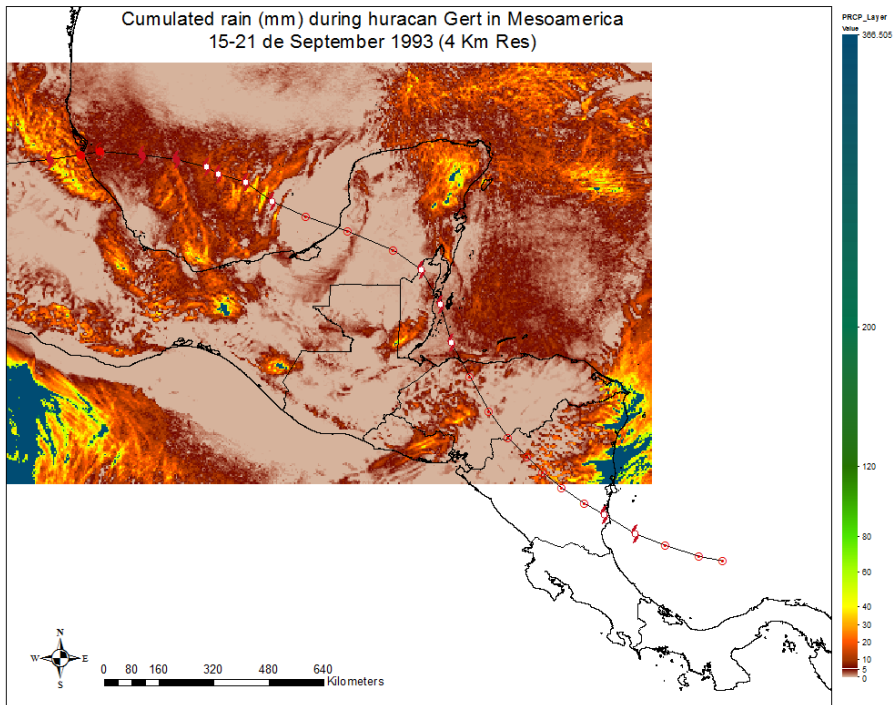
- A higher resolution of the mesh is required to efficiently detect the increase in tropical cyclones.
- Having the possibility of visualizing the maximum speeds, and not only the means, would be of great help.

TC Changes

Comparison between 36 Km and 12 Km of Resolution

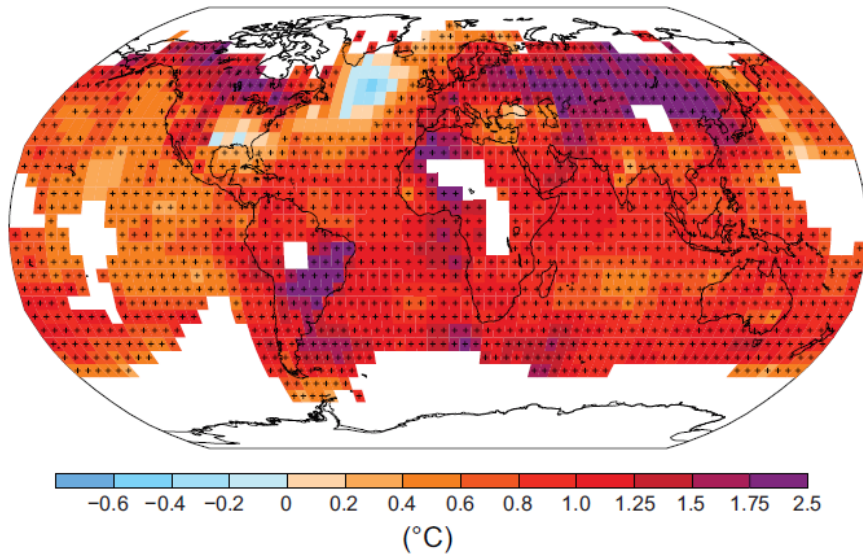


Precipitation



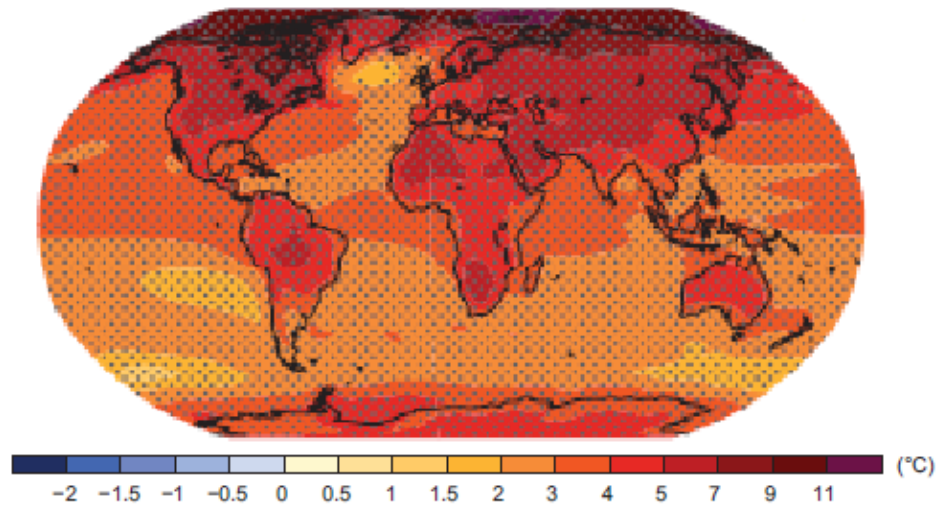
Changes in Surface Temperature

Observed change in surface temperature 1901–2012

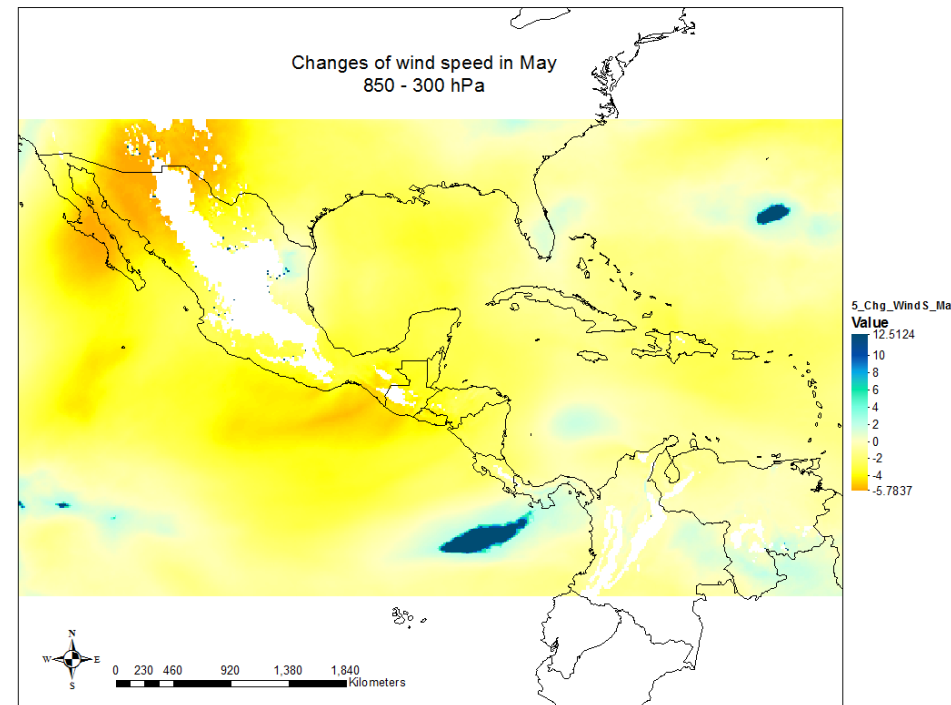
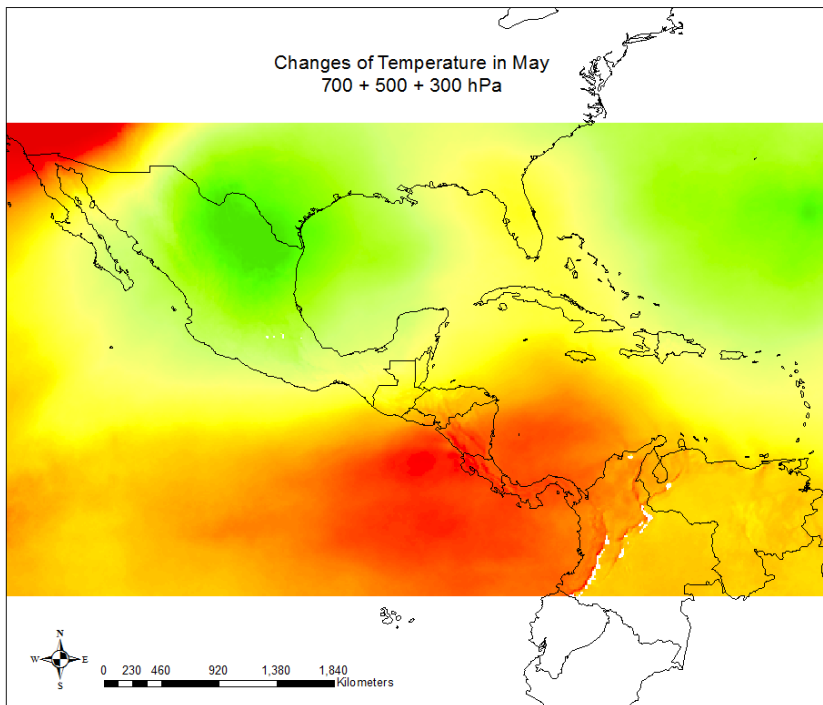


RCP 8.5

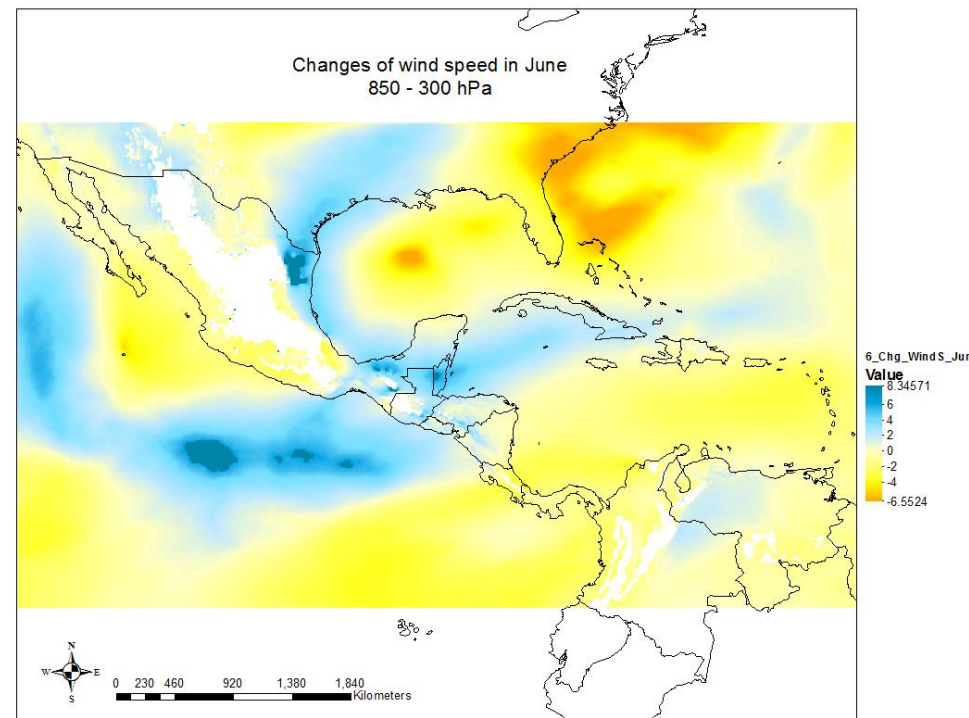
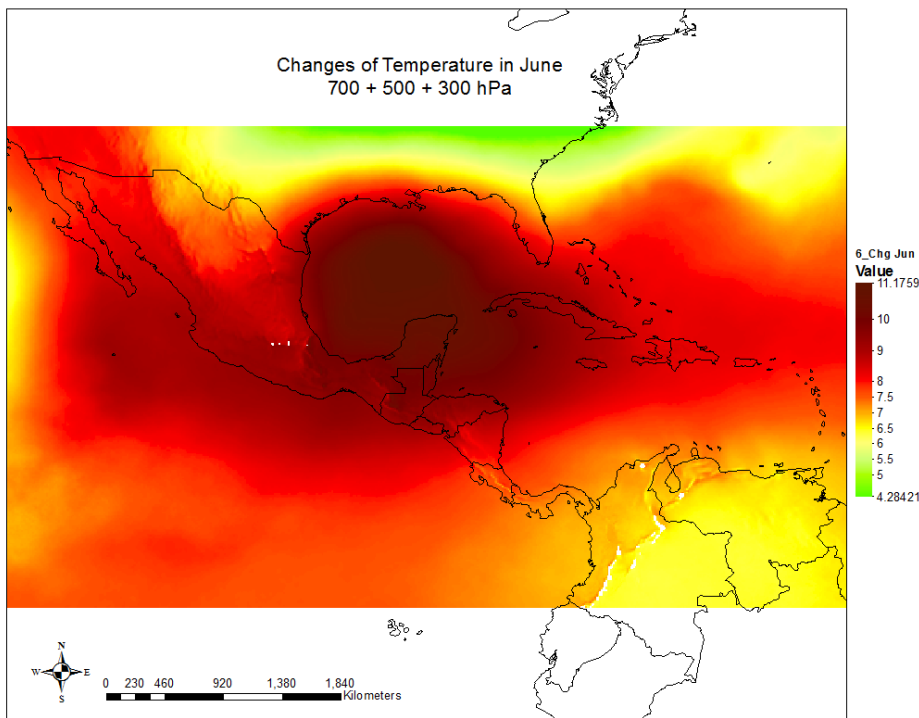
Change in average surface temperature (1986–2005 to 2081–2100)



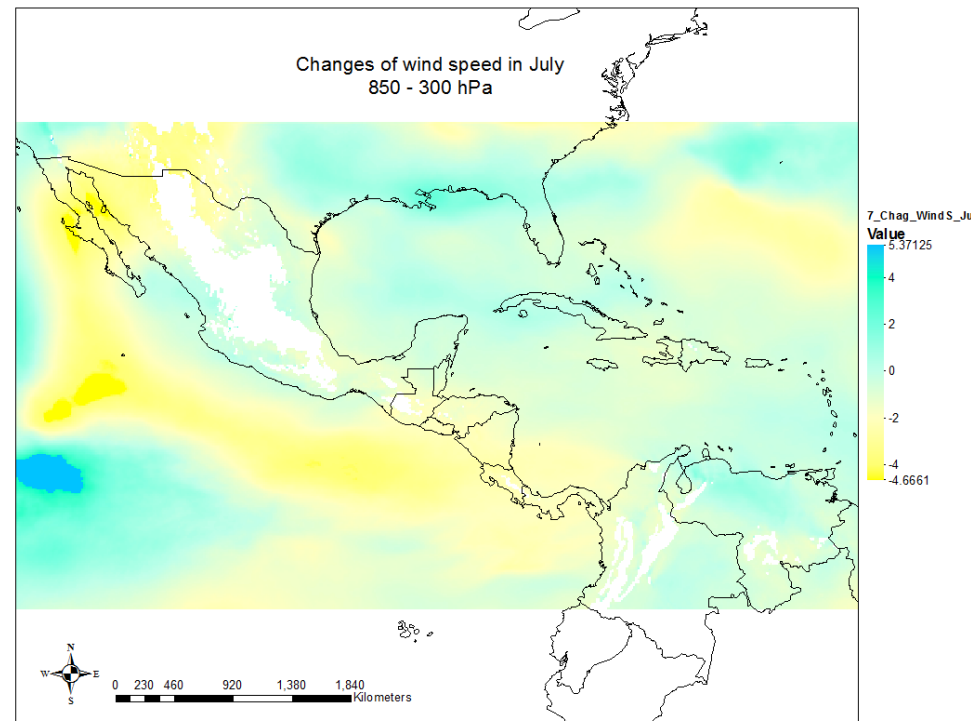
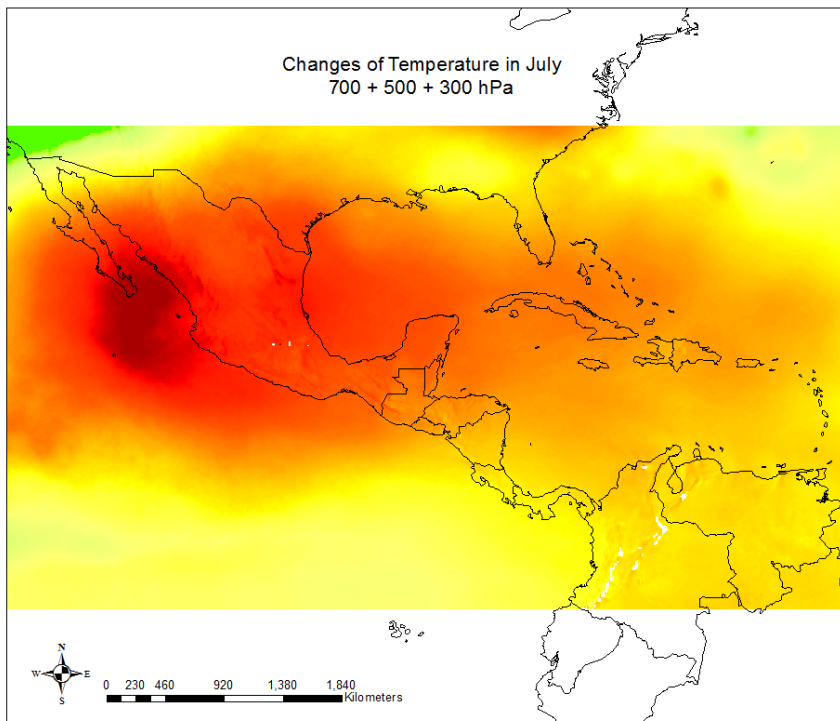
Changes in Temperature and Wind Speed in May



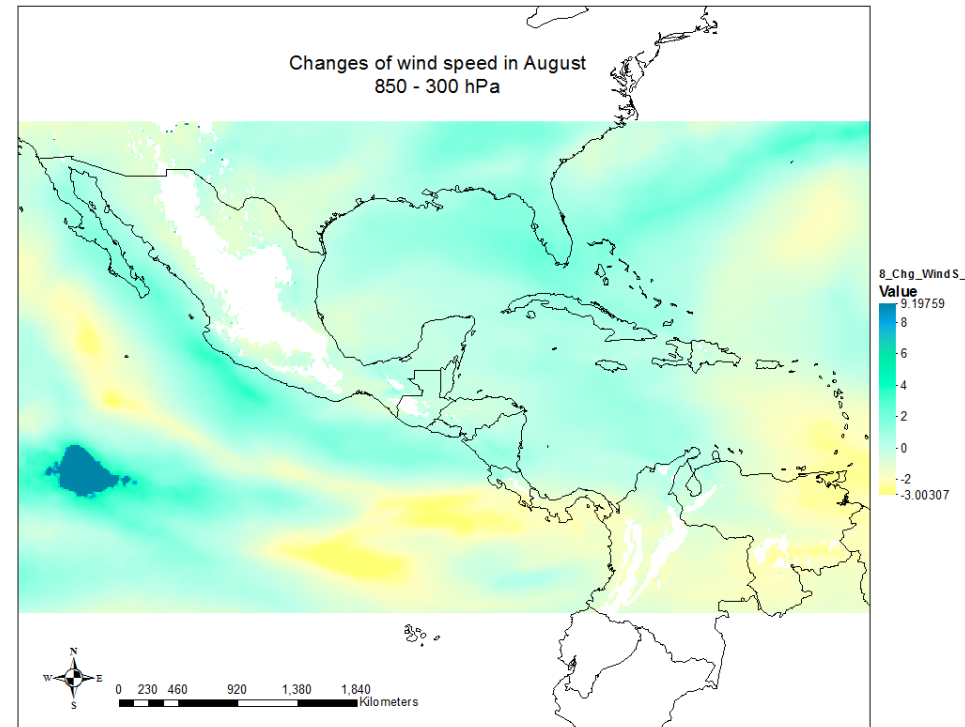
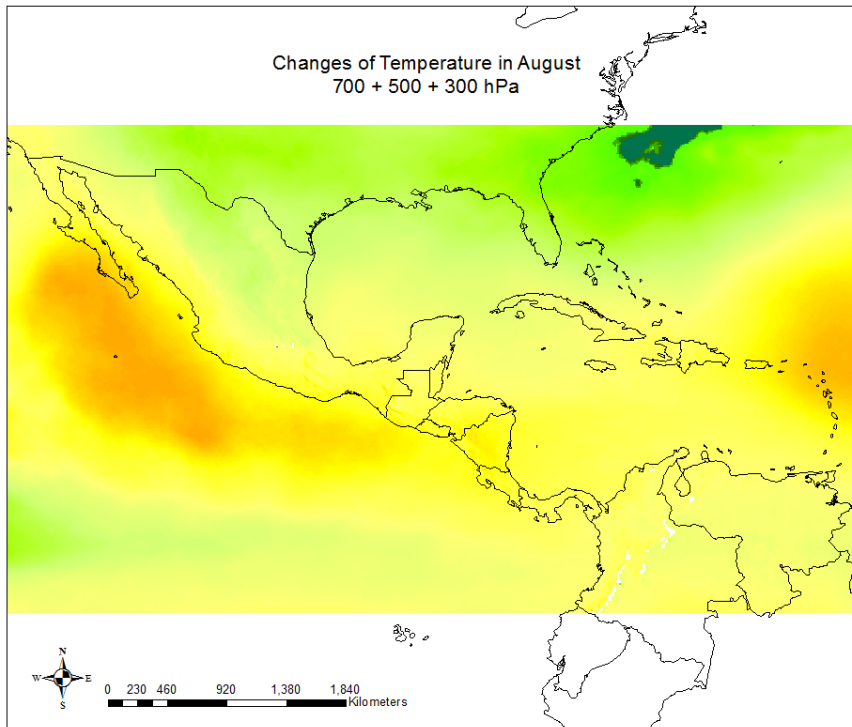
Changes in Temperature and Wind Speed in June



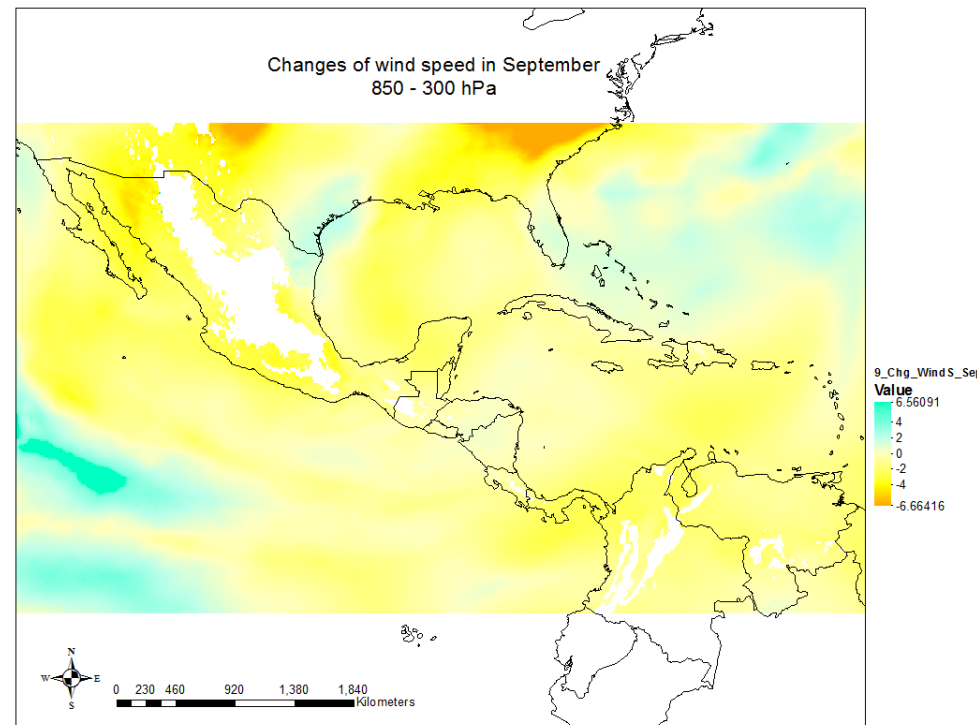
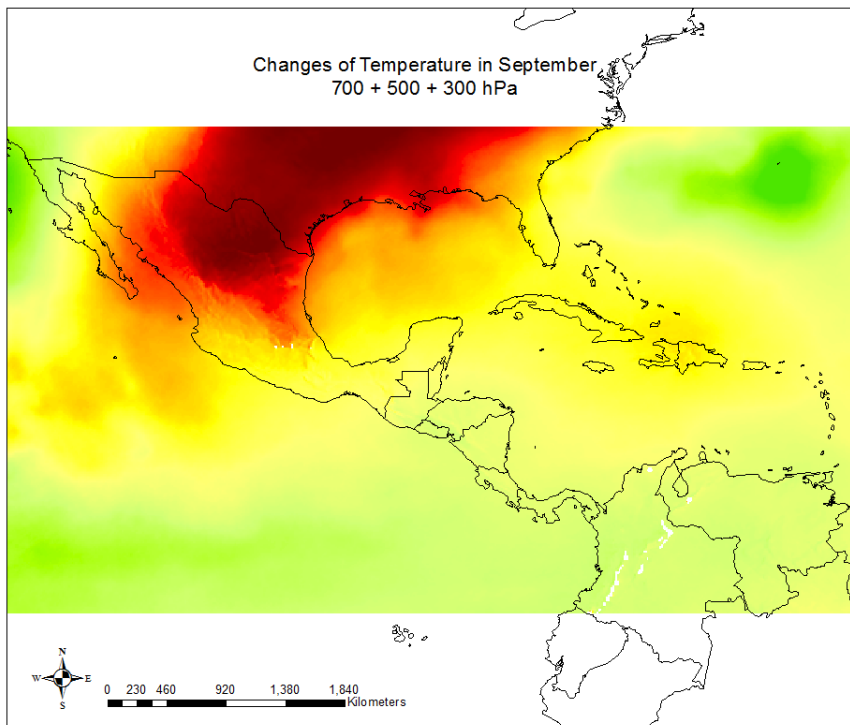
Changes in Temperature and Wind Speed in July



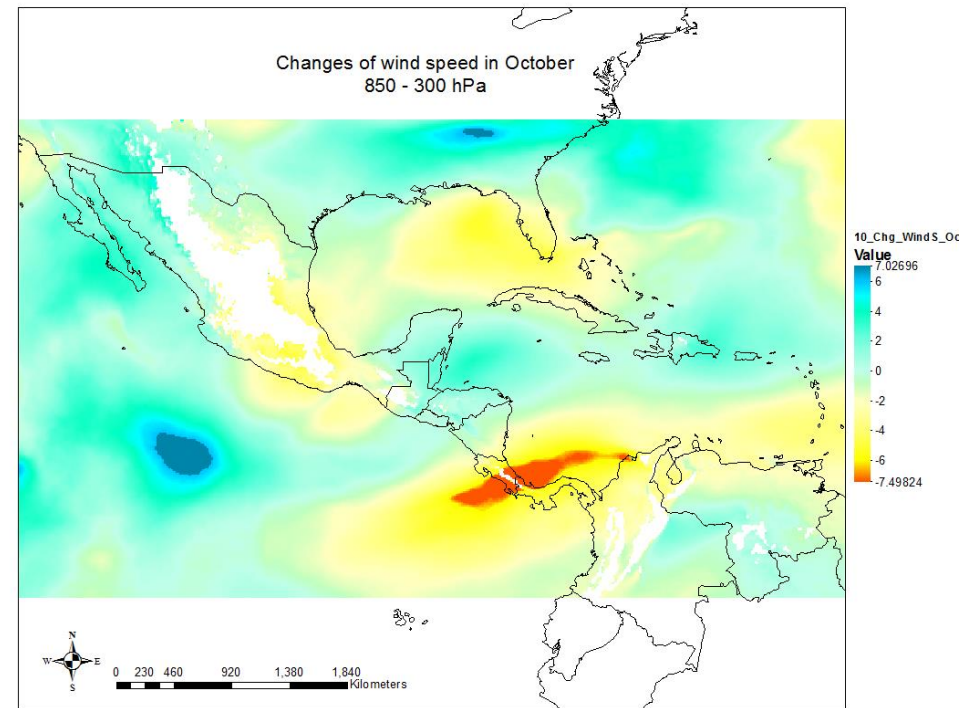
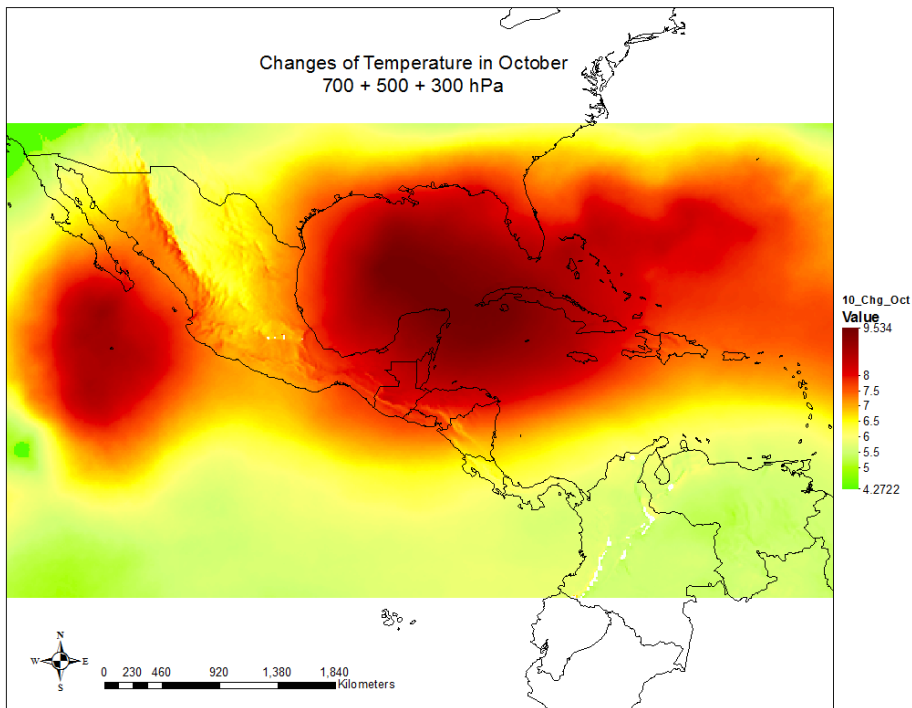
Changes in Temperature and Wind Speed in August



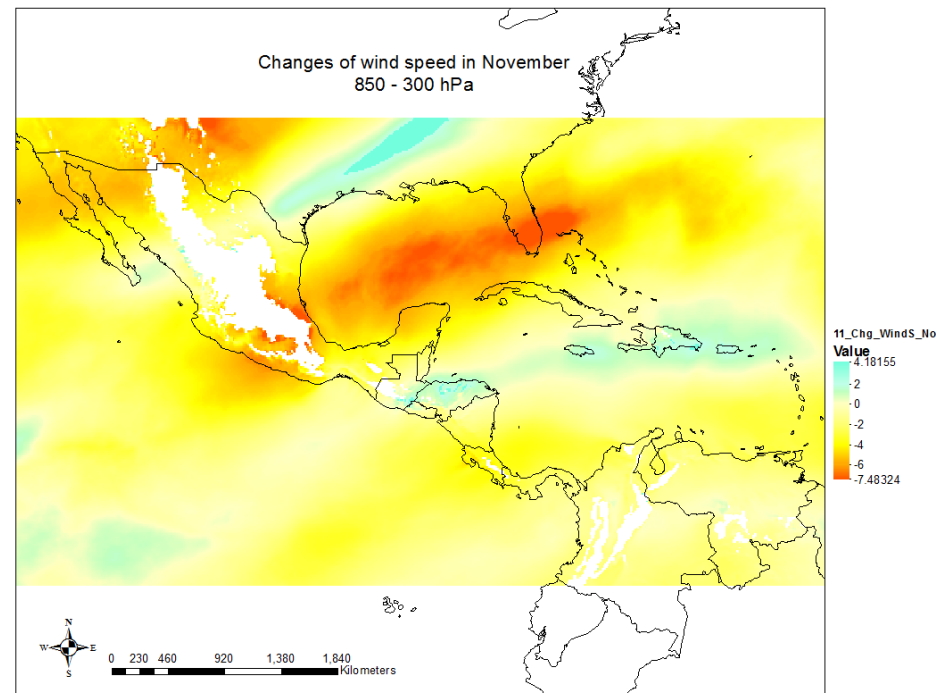
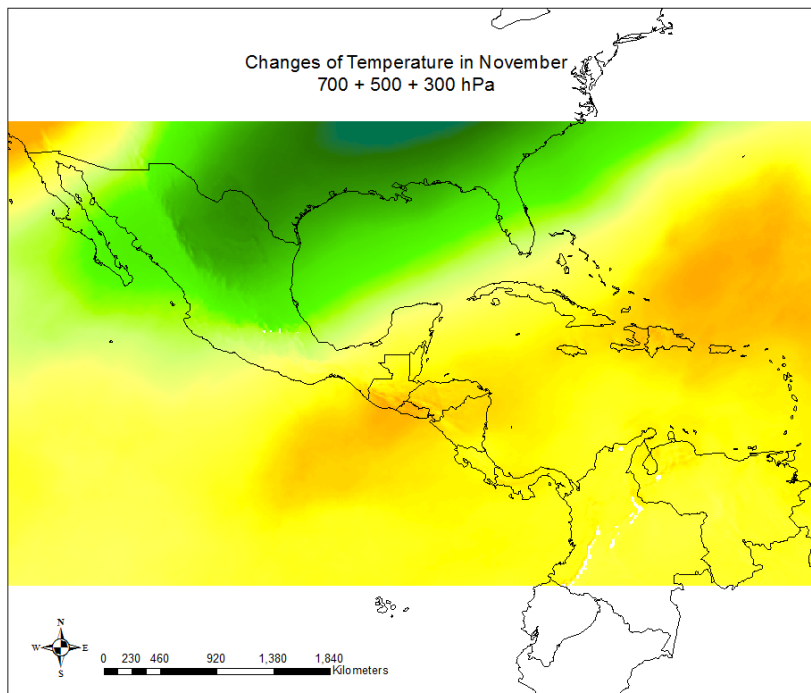
Changes in Temperature and Wind Speed in Sept



Changes in Temperature and Wind Speed in Oct



Changes in Temperature and Wind Speed in Nov



Improvements for MapMaker

Improvements

- It is necessary to have the option of choosing any of the IPCC scenarios. (2.6,4.5, 6.0 y 8.5).
- Implement the option to scale the results to intermediate times.

$$\bar{T}_{INT} = \bar{T}_{PD} + (\bar{T}_{FT} - \bar{T}_{PD}) \left(\frac{t_{INT} - t_{PD}}{t_{FT} - t_{PD}} \right)$$

where \bar{T} and t are temperature and time, respectively, and the subscripts PD , FT , and INT refer to the present-day, future, and intermediate climatologies, respectively.

- Include analysis results for the years 2000 to 2005 and 2011 to 2015 for Mesoamerica and define an additional domain for the pacific.
- Add genesis parameters in MapMaker as relative and absolute vorticity,
- Create a window to make different calculations with different parameters as for exemple the sum of temperaturas anomalies at different levels of hPa for a date and point of interest

Thanks
