

CAP Experiences and Perspectives for its Rapid Implementation in Cuba



**José Rubiera, Ph.D
Head of National Project
to Improve Weather Watches and Warnings
Processes in Cuba**

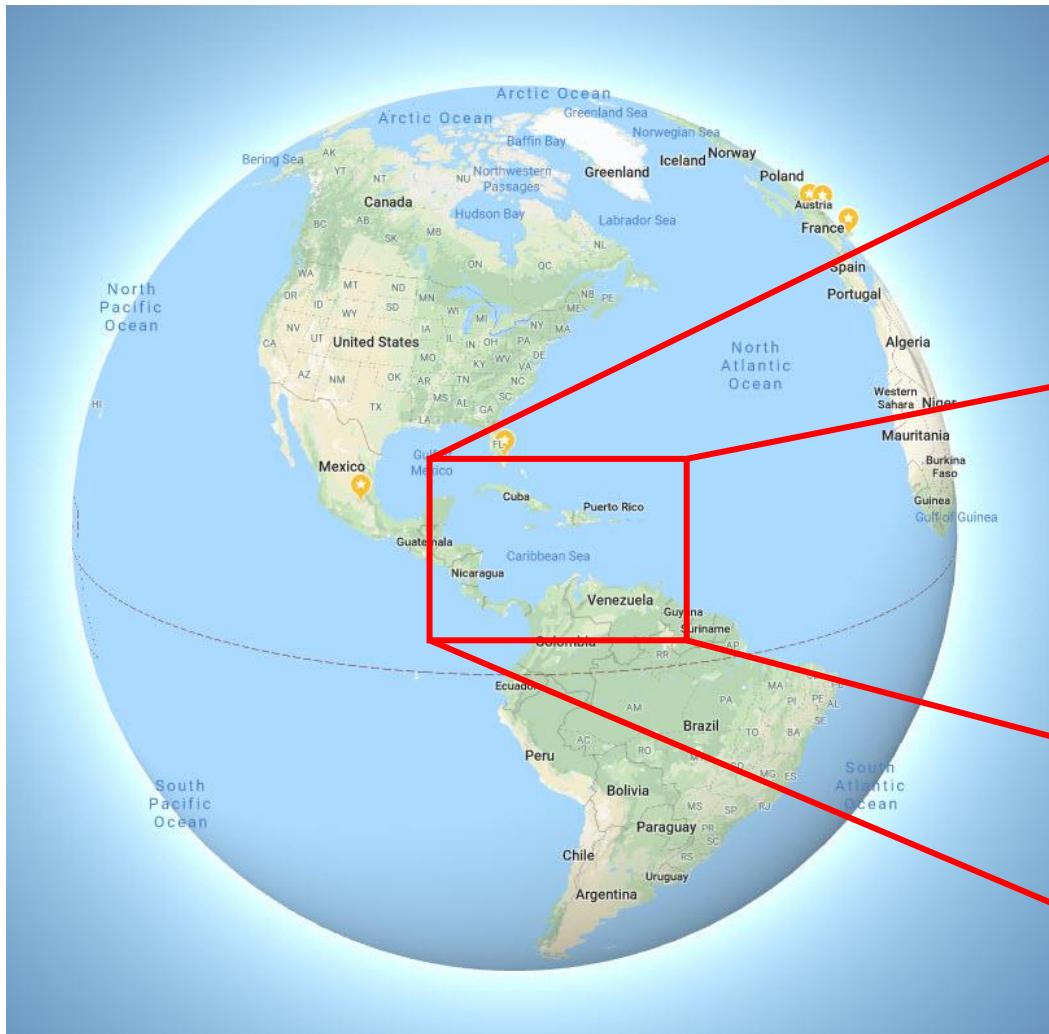


**2019 Common Alerting Protocol (CAP)
Implementation Workshop,
Mexico City, MEXICO,
16-18 October, 2019**

TOPICS

- Overview on Cuba.
- Cuban National Meteorological Service: Instituto de Meteorología.
- Why CAP Implementation is a Need in Cuba?.
- Difficulties for the Use of CAP in Cuban Met Service at an earlier time
- Evolution of Telecom and Internet in Cuba 2018 - 2019.
- Inmmediate Plan to Implement CAP in Cuba in 2020.

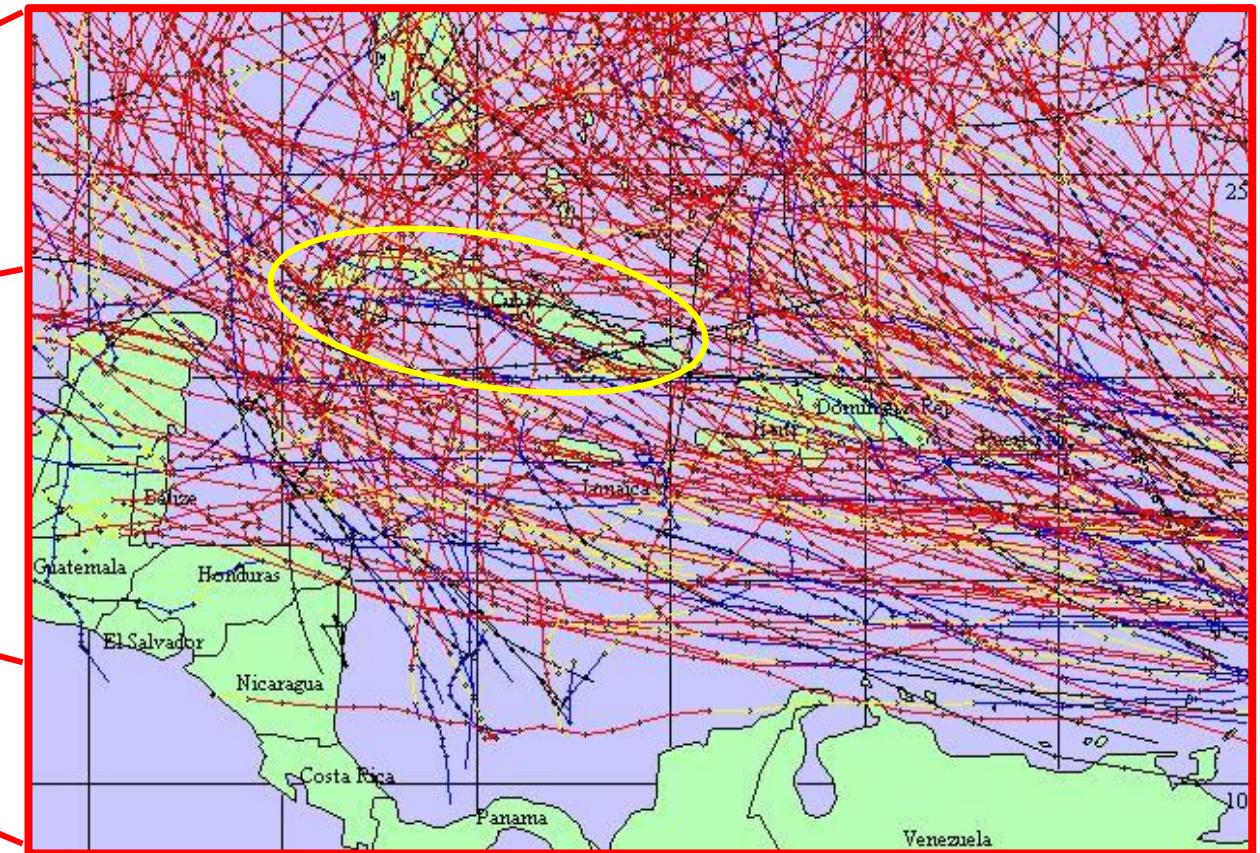
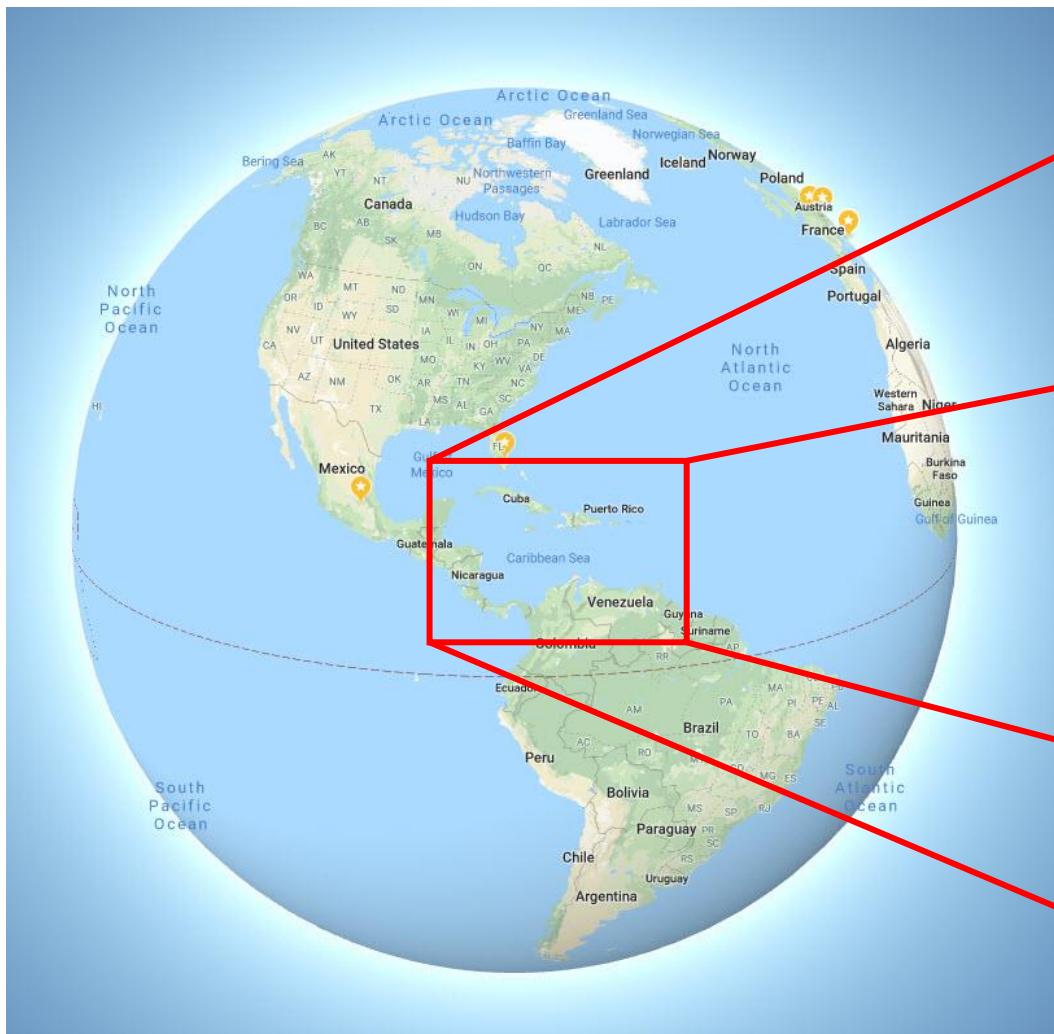
Overview on Cuba



Source: Google Maps

Overview on Cuba

Main Weather Hazard: **HURRICANES**



Source: Google Maps

Overview on Cuba

- **TORRENTIAL RAINS**
Lowland Floodings
Flash Floodings in Cities
- **SEVERE THUNDERSTORM**
Flash Floods
Strong Local Winds
Hail
Tornado
- **STRONG WINDS**
- **COASTAL FLOODINGS**



Source: Google Maps

Overview on Cuba

Area:

110 922 km²

Coastline:

5 746 km

Population:

11 million

Capital:

Havana

2.5 million inh.



Cuban National Meteorological Service: Instituto de Meteorología

1 National
Meteorological
Center

16 Provincial
Meteorological
Centers

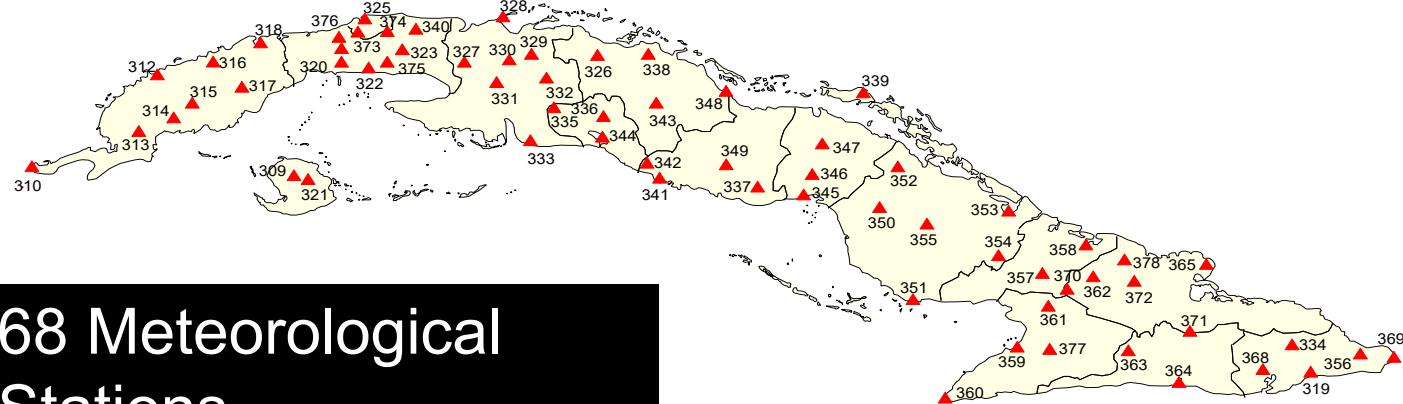
16 provinces



Cuban National Meteorological Service: Instituto de Meteorología

**WEATHER
STATION
NETWORK IN
CUBA**

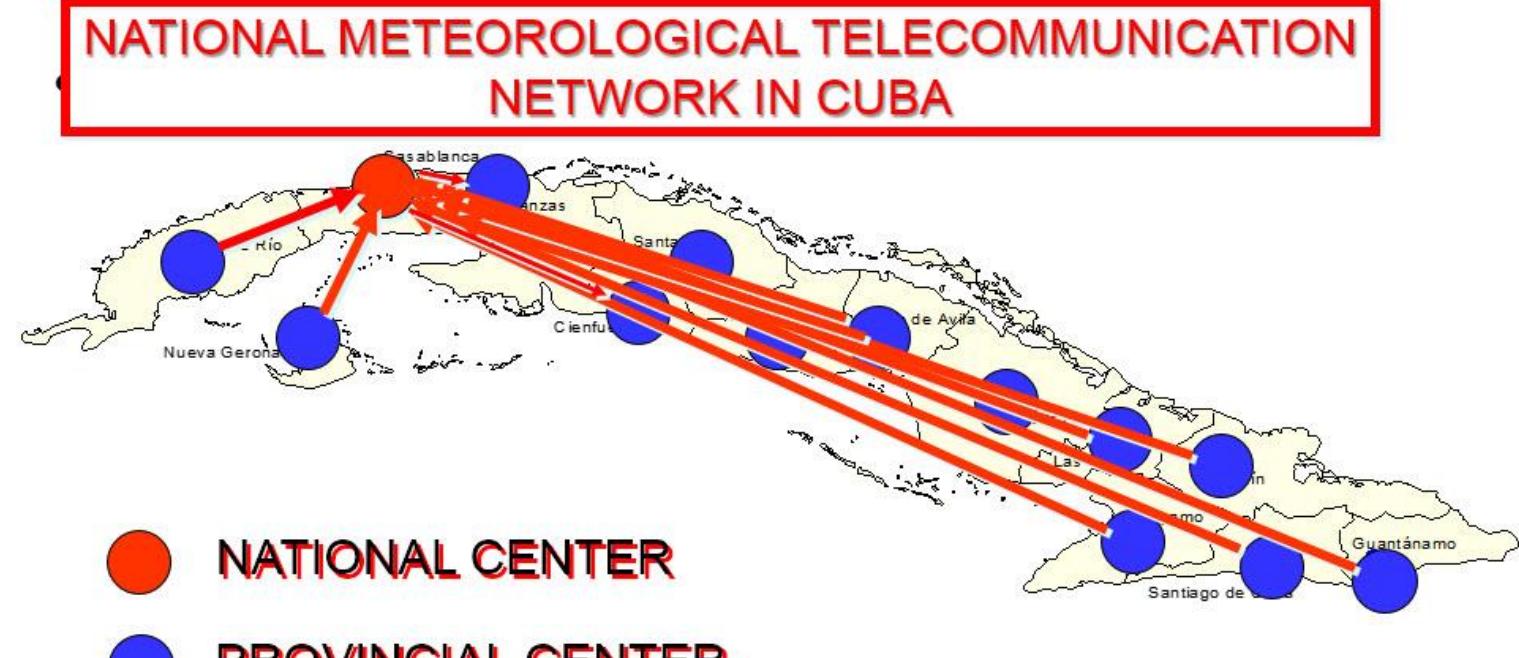
RED DE ESTACIONES METEOROLÓGICAS



68 Meteorological
Stations
1 Upper Air Sounding
Station
2 Satellite Earth
Station

Cuban National Meteorological Service: Instituto de Meteorología

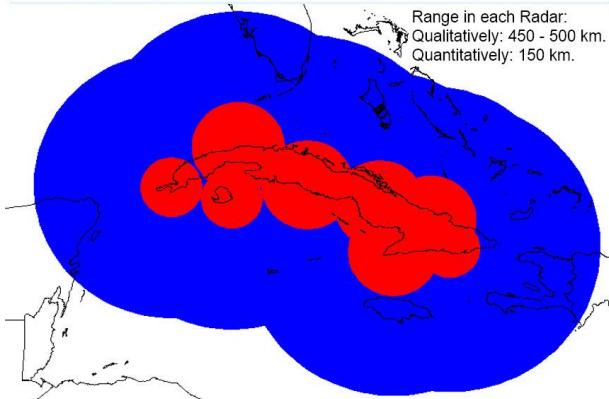
NMTN digitally provides all relevant exchange of meteorological information in the Country, linking the National Met. Center with all Provincial Met. Centers



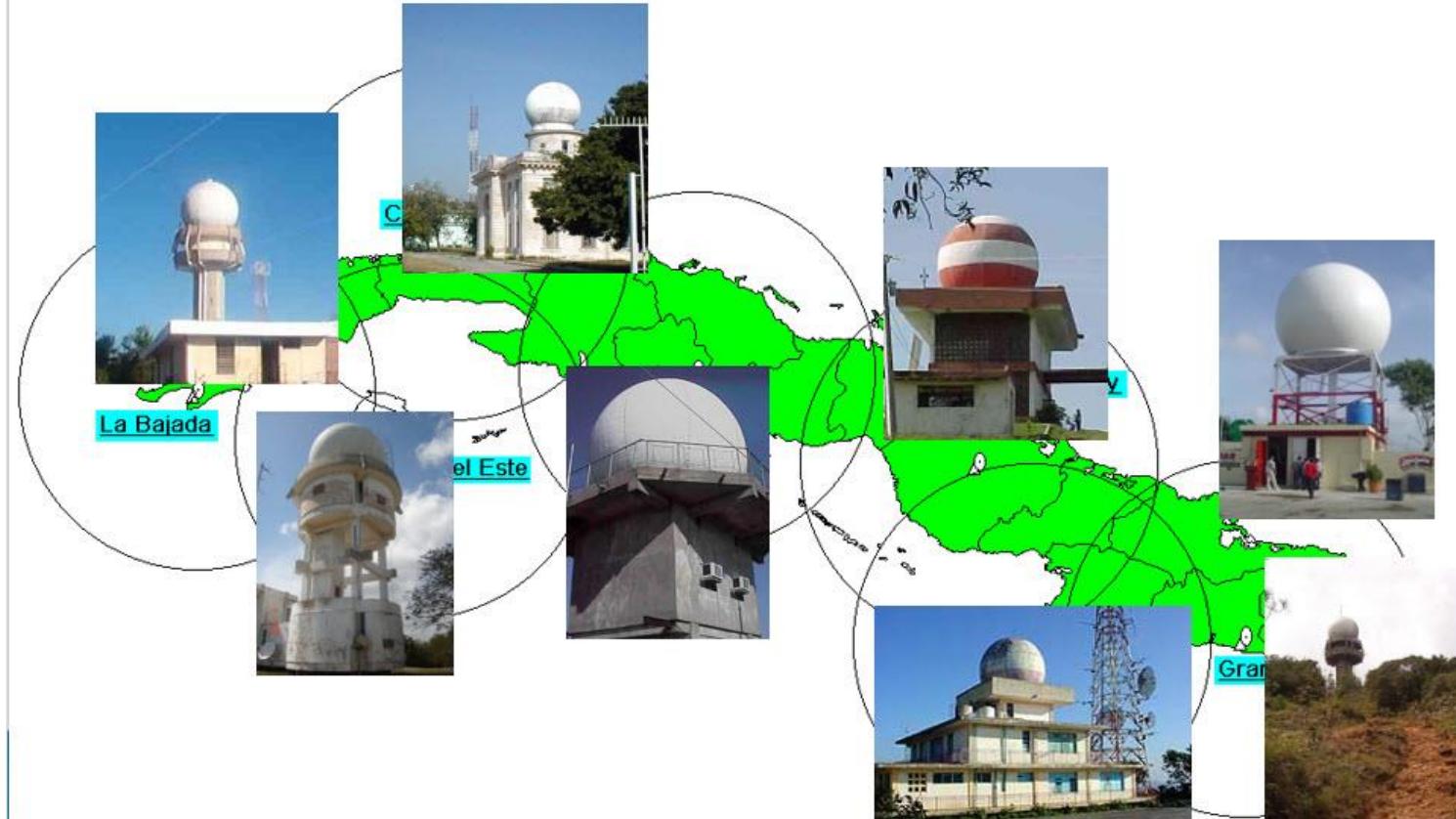
Cuban National Meteorological Service: Instituto de Meteorología

**8 Weather Radars
covers the entire
Country and sea
areas surrounding
Cuba**

RADAR NETWORK COVERAGE IN CUBA



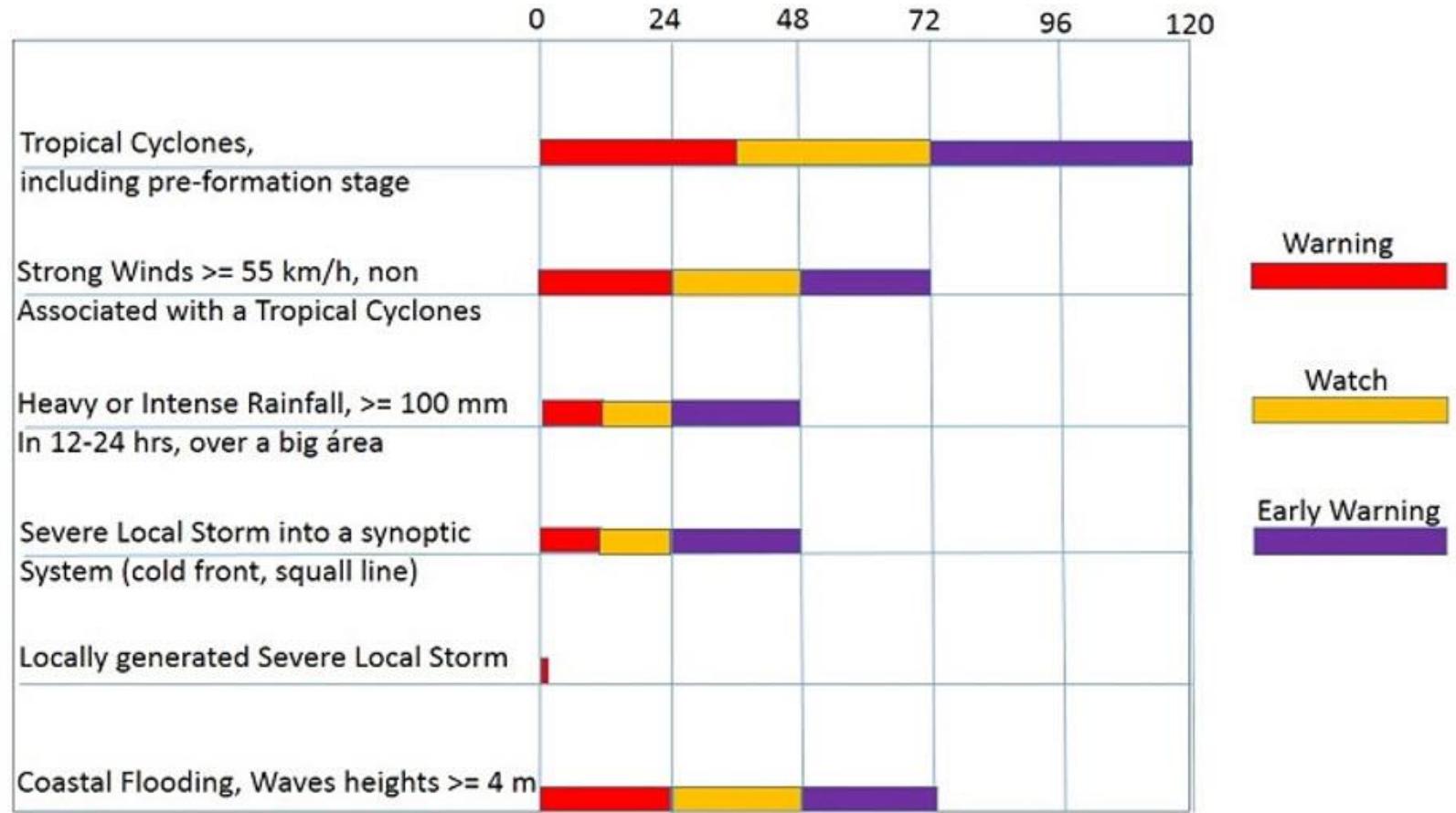
WEATHER RADAR NETWORK COVERAGE IN CUBA



Cuban National Meteorological Service: Instituto de Meteorología



Why CAP Implementation is a Need in Cuba?

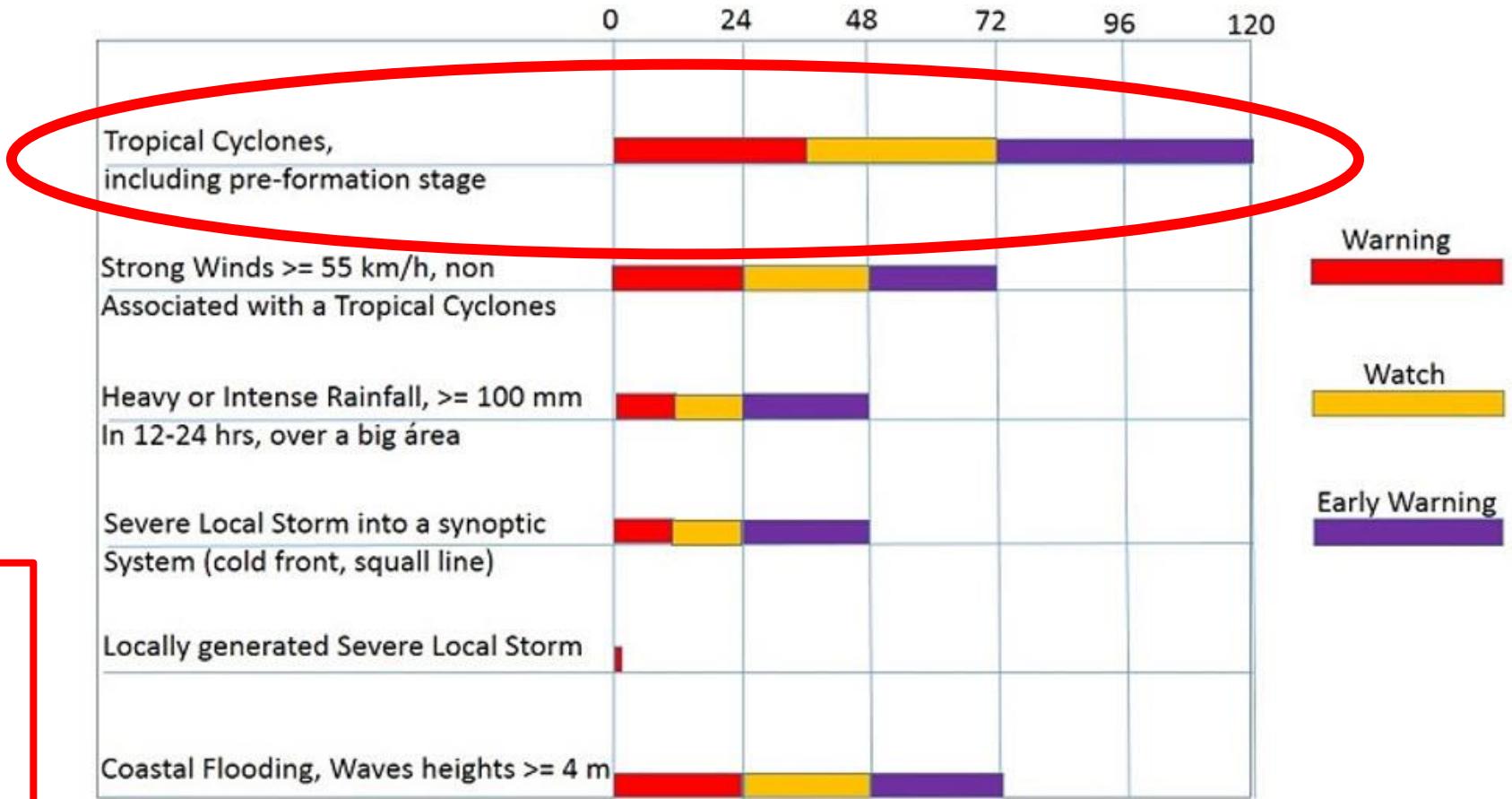


Leading Time for Watches and Warnings in Cuba

Why CAP Implementation is a Need in Cuba?

While Tropical Cyclones has a pretty good Watch and Warning System that has worked very well in years (just few or almost no fatalities in Cuba, even in very strong hurricanes)

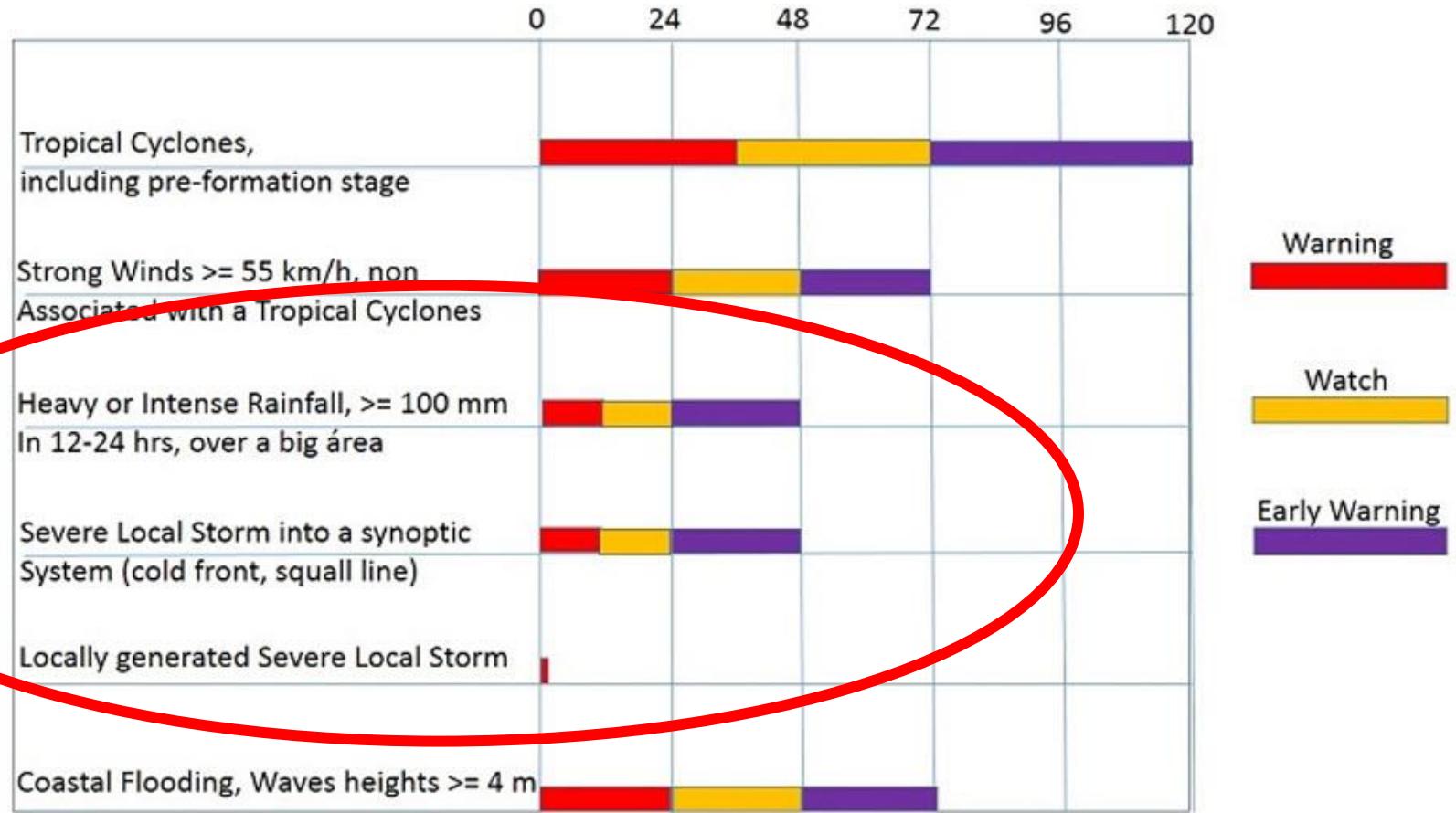
Leading Time for Watches and Warnings in Cuba



Why CAP Implementation is a Need in Cuba?

Others, generally have not that success, because lead times are shorter and diffusion of information is not as effective as in hurricanes

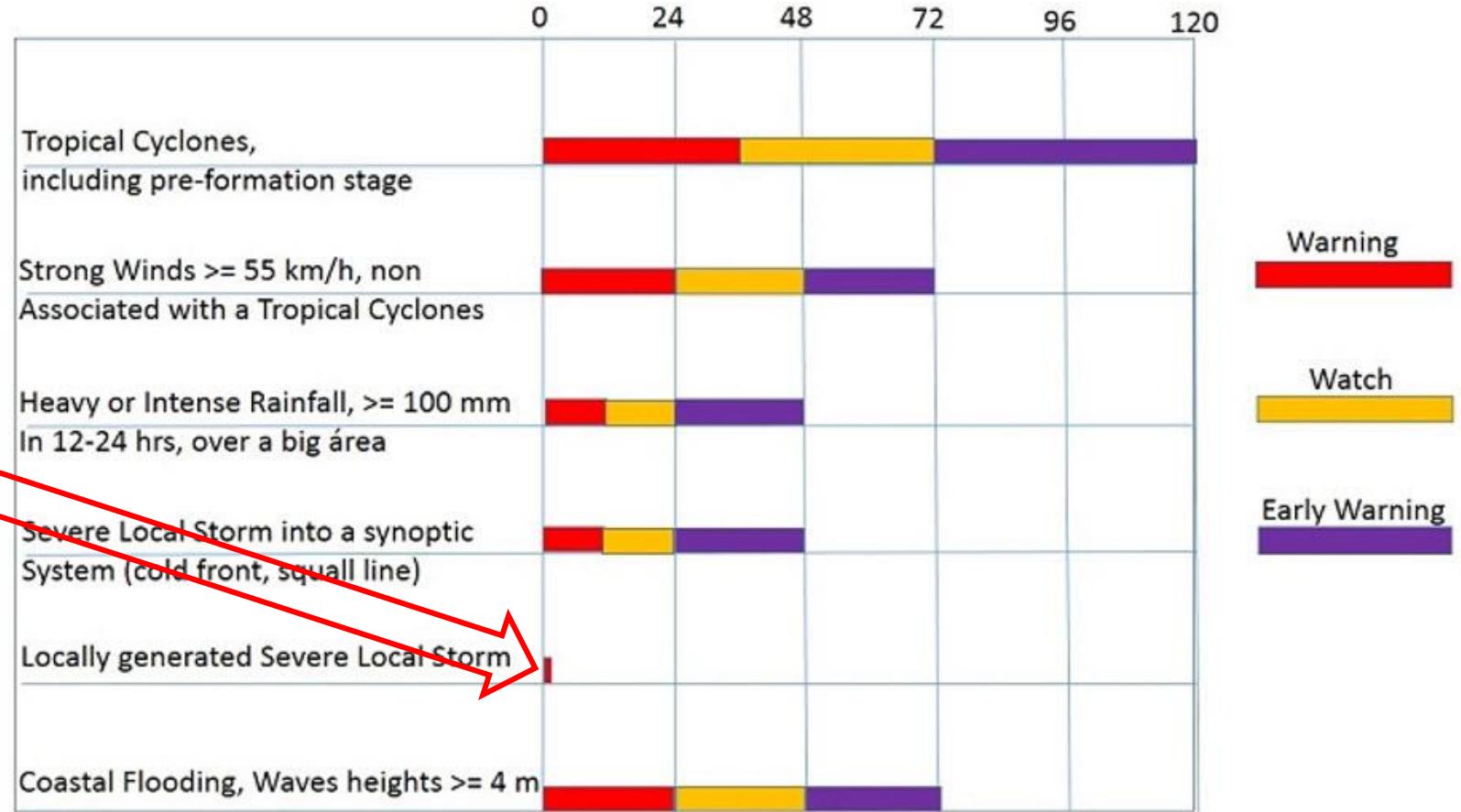
Leading Time for Watches and Warnings in Cuba



Why CAP Implementation is a Need in Cuba?

The main problem:
Local Severe Storm and its related features:
Flash Floods
Strong Winds
Wind Waves at the coast
Hail
Tornado

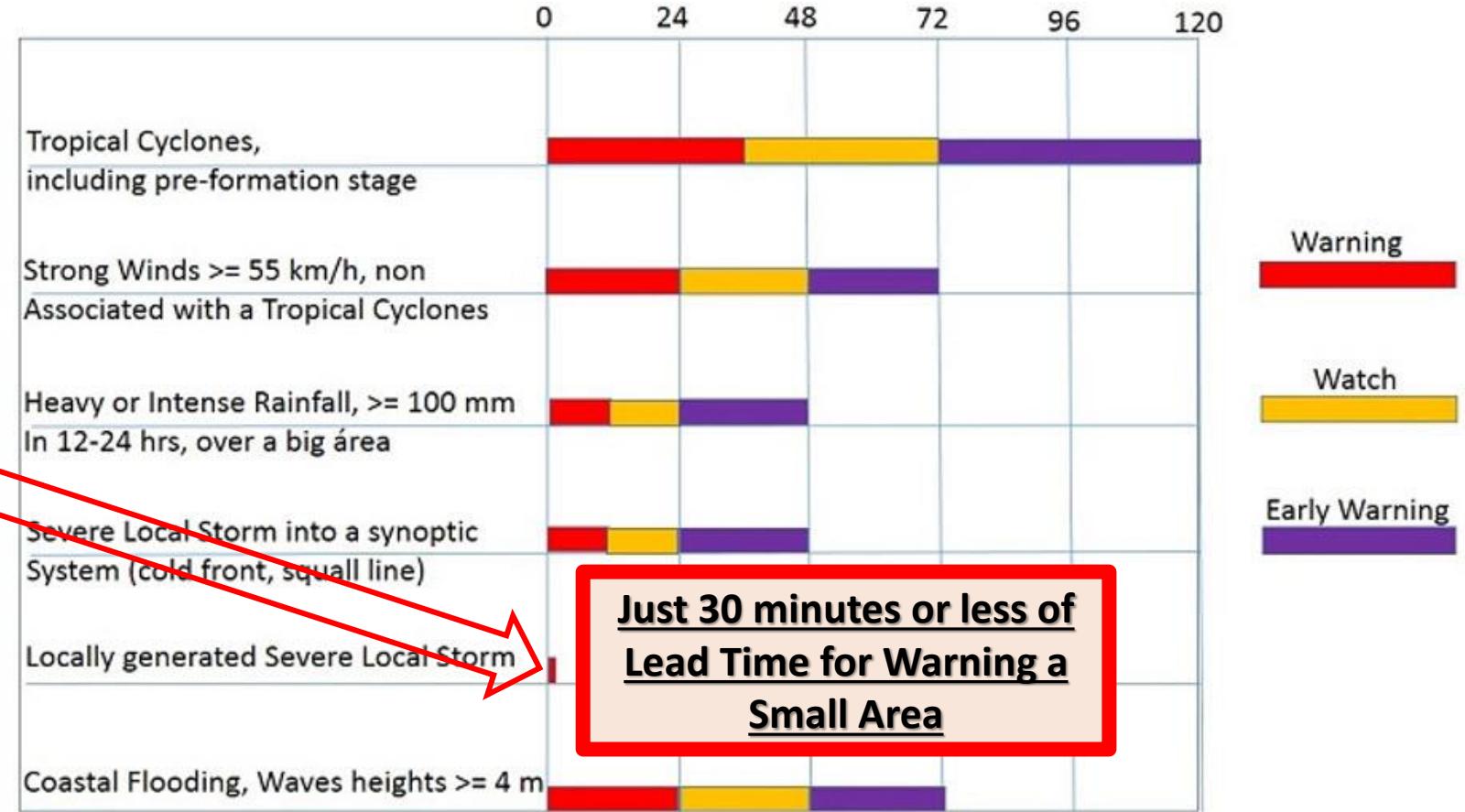
Leading Time for Watches and Warnings in Cuba



Why CAP Implementation is a Need in Cuba?

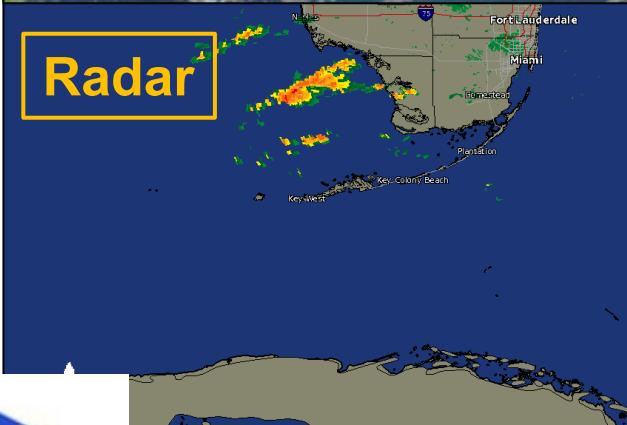
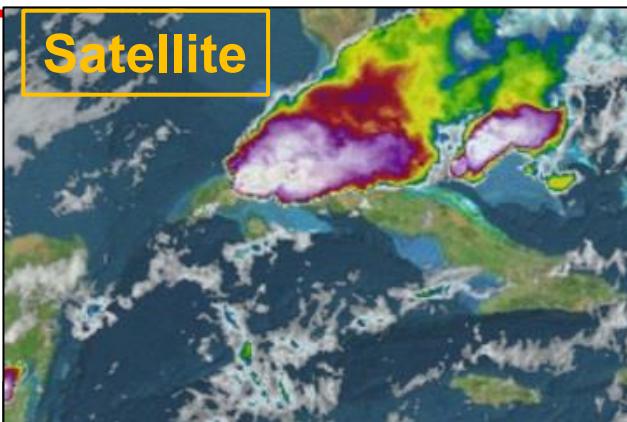
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Leading Time for Watches and Warnings in Cuba



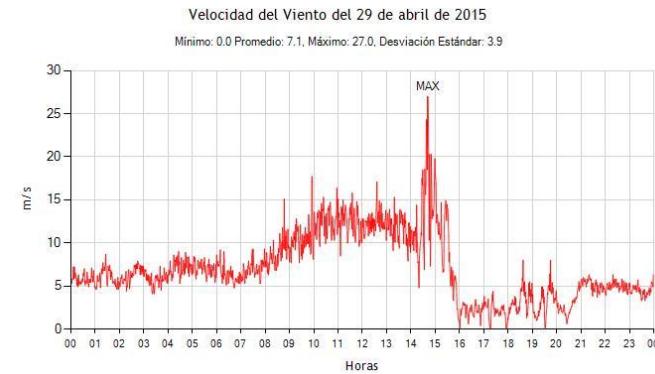
Why CAP Implementation is a Need in Cuba?

CAP is the only way to alert people in very fast developing dangerous weather. An example was the squall line that effected Havana (> 2 million inhabitants) on April 29, 2015.

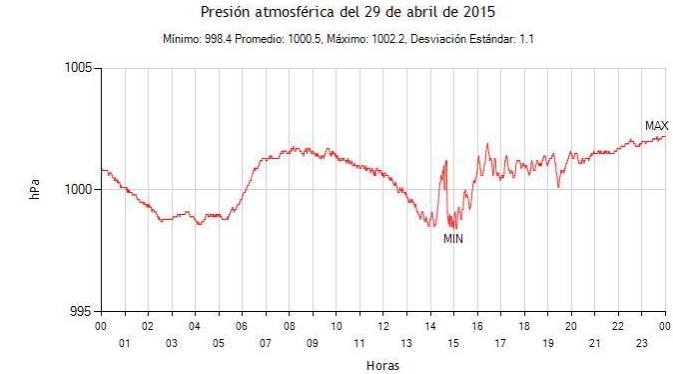


This severe local storm developed rapidly just in front of Havana.

Only a 20-min lead time to warn.... of course, the warning couldn't go through.... Nobody received it before the event.



Winds were up to 27 m/s in a few minutes



Atmospheric Pressure dropped to 998 hPa

Why CAP Implementation is a Need in Cuba?

The main hazard in this event was the heavy and intense rainfall that disrupted all normal affairs in the 2-million inhabitants city, but fortunately with just one fatality

Heaviest precipitation fell in about 20 minutes.

Greatest amounts were recorded in downtown Havana:
239 mm in Plaza de la Revolución;
197 mm in Cerro;
188 mm in Loma de la Cruz;
186 mm in La Palma; and
171 mm in Habana del Este

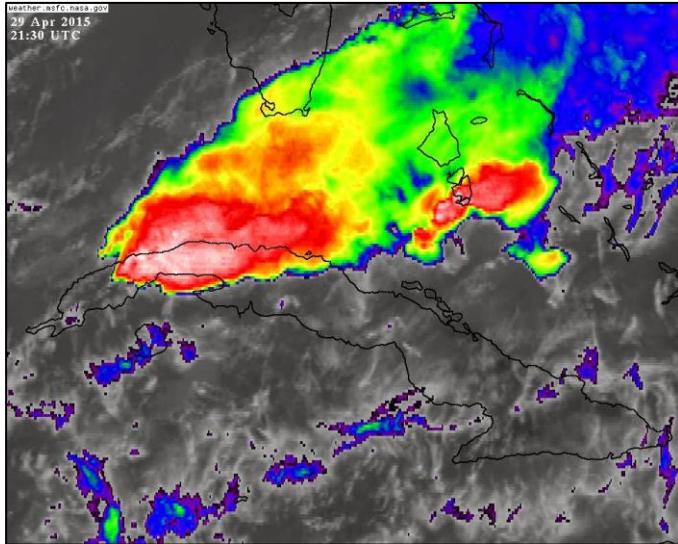


Why CAP Implementation is a Need in Cuba?

**City normal life completely
disrupted in 15 minutes**



Why CAP Implementation is a Need in Cuba?



The most intense rainfall lasted less than half an hour



The night fell over a flooded city that was without electric power



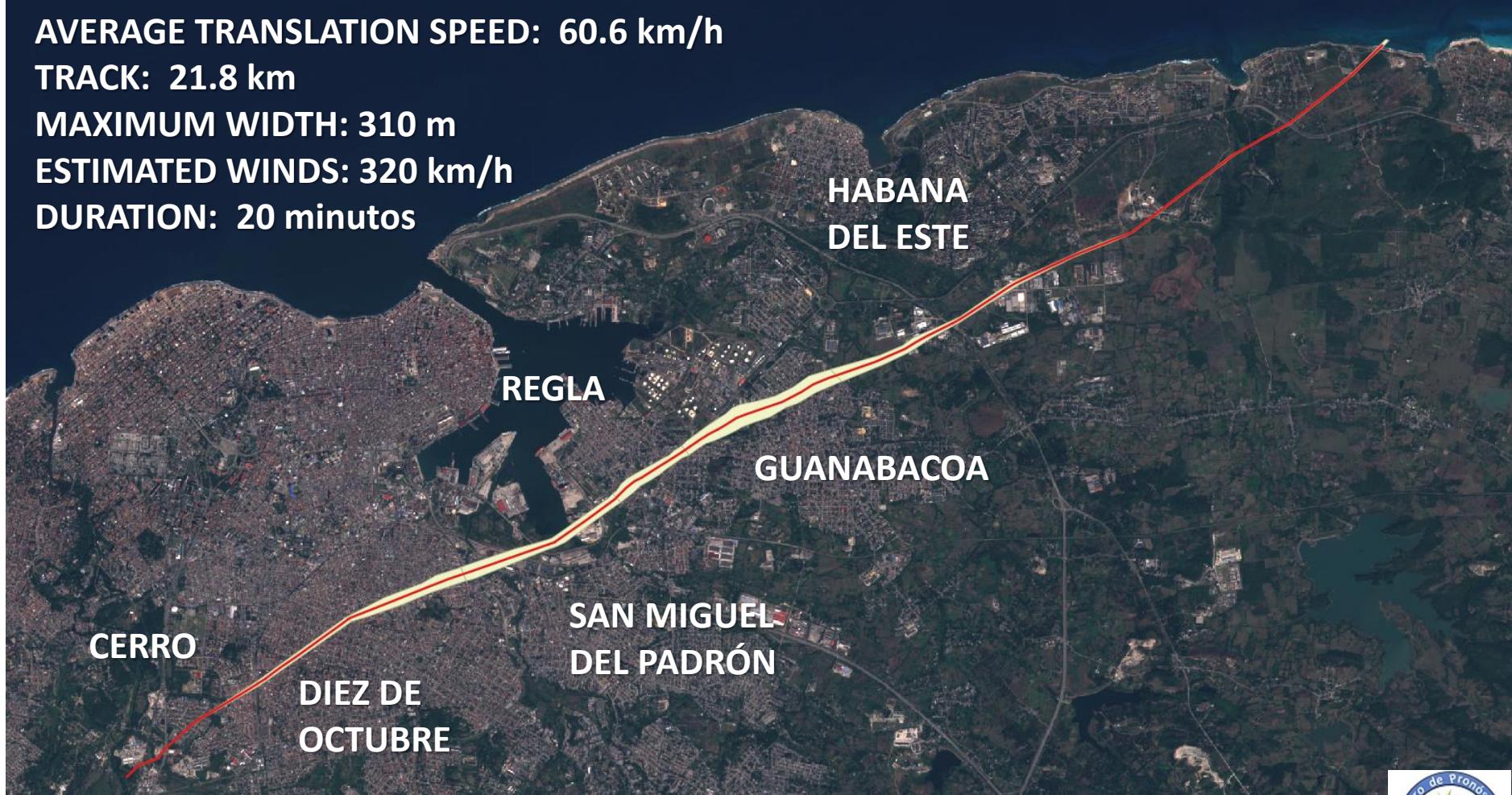
Havana completely under water

Why CAP Implementation is a Need in Cuba?

**Severe Local Storm
with Very Strong
EF-4 Tornado hits
Havana City
January 27, 2019**



AVERAGE TRANSLATION SPEED: 60.6 km/h
TRACK: 21.8 km
MAXIMUM WIDTH: 310 m
ESTIMATED WINDS: 320 km/h
DURATION: 20 minutos



Why CAP Implementation is a Need in Cuba?



Why CAP Implementation is a Need in Cuba?



People's Life Completely Changed in those 20 minutes

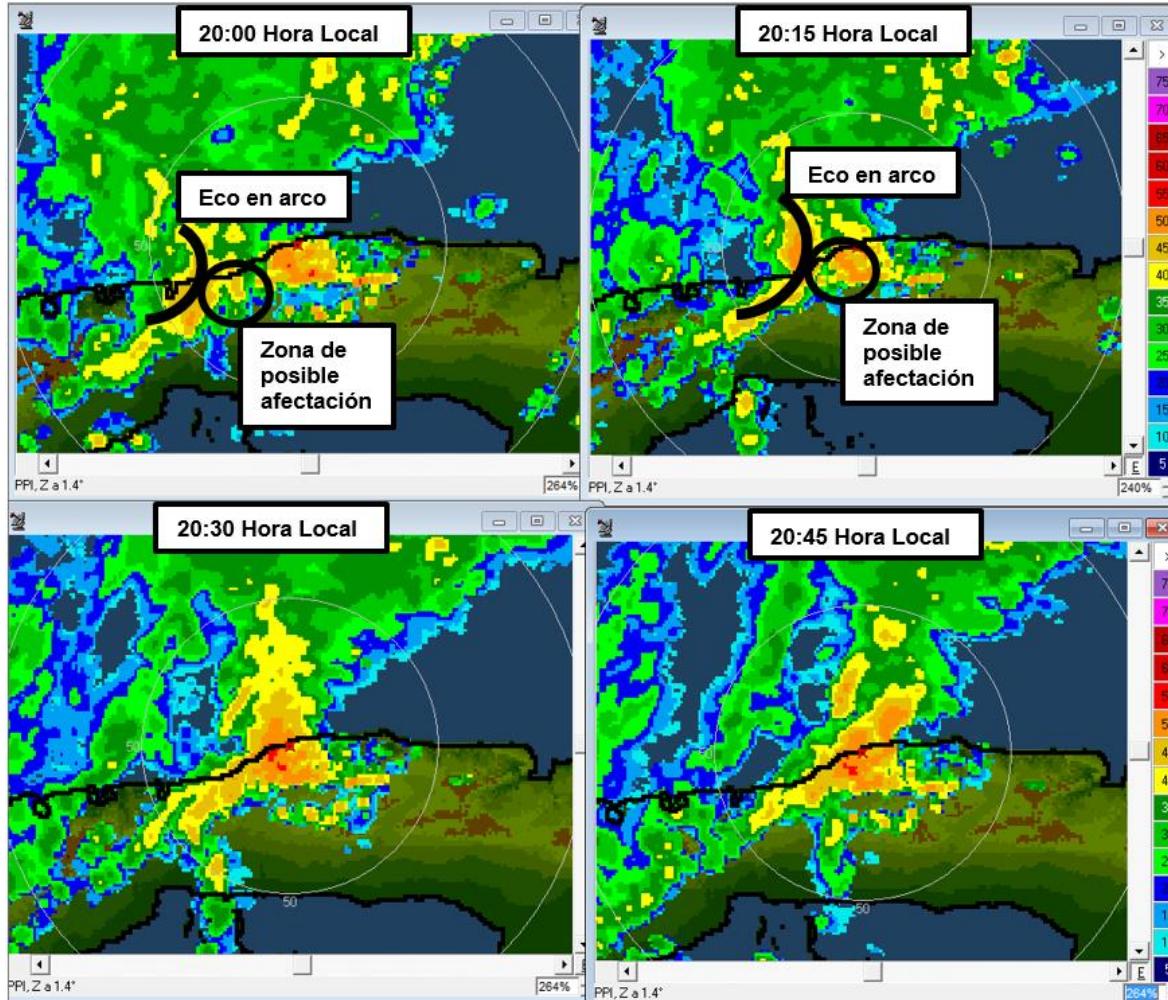
Fortunately only 7 fatalities, but the Tornado swatch área was almost completely destroyed

There was NO WARNINGS, other than general conditions favored severe thunderstorm áreas to develop in Western Cuba

Why CAP Implementation is a Need in Cuba?

Havana
Weather Radar
Imagery

20:00 to 20:45
January 27,
2019.



With this information and CAP, something else could have been done to warn people on an impending threat

Difficulties for the Use of CAP in Cuban Met Service at an earlier time

At InsMet:

- ✓ Internal tests were made in 2015 using InsMet web page, with no graphic.
- ✓ People that were trained at that moment, later moved to other positions outside InsMet.
- ✓ Smart Alert Finnish software was installed in 2017, but technical problems prevented it to be fully operational.

Difficulties for the Use of CAP in Cuban Met Service at an earlier time

Country Infrastructure (2014 – 2018) also prevented the use of CAP:

- ✓ Internet not widely used in the Country; Only available for a small amount of people, roughly 3 million users, 25 % of 11.3 million inhabitants in 2014.
- ✓ Very Slow Internet connection, normally no wide band.
- ✓ Very high cost for one-hour surfing of the web, around 8 - 9 % of an average monthly salary after a 50 % price off being in effect since July 2015.
- ✓ Cell phone are available for many people, but still below 40 % of the population.
- ✓ No Internet Connection in cell phones.

Evolution of Telecom and Internet Cuba in late 2018 and 2019

Telecom scenario is rapidly changing in Cuba

Evolution of Telecom and Internet Cuba in late 2018 and 2019

Million Mobile Lines

5.56 millones
líneas móviles

2.5 millones
habilitados
con acceso
a datos

Million with Data Access

VÍAS DE ACCESO A INTERNET

Wi-Fi Areas

1 427
Áreas wi fi

680
Salas de
navegación

Surfing Places

Permanent Accounts

Más de
2 millones
cuentas
permanentes

Más de
87 mil
Servicios
nauta Hogar

Home Internet Connections

Primer
semestre
2019

2500
Nuevos enlaces
de conectividad
a empresas

Para un total
de **42 mil**

New Contracts of Connectivity
to Enterprises



Evolution of Telecom and Internet Cuba in late 2018 and 2019

ACCESO A INTERNET

Ampliación | Diversificación | Accesibilidad

2013

118
salas de
navegación

Navegación
internacional
4.50 CUC
Nav. nacional
0.60 CUC

2014

Correo
nauta
móviles

70 %
rebaja tarifaria
sector
empresarial
Bolsa nauta
1.00 CUC/Mgh

2015

35
áreas wifi
públicas

Navegación
internacional
2.00 CUC

2016

Prueba
nauta Hogar
2 consejos
populares

Navegación
internacional
1.50 CUC
Nav. nacional
0.25 CUC
Bolsa nauta
0.30 CUC/Mgb

2017

Oferta
nauta Hogar

Navegación
internacional
1.00 CUC
Nav. nacional
0.10 CUC

2018

Internet
en los
móviles

Oferta
nauta Hogar
localidades
rurales
Bolsa nauta
0.02 CUC/Mgh

2019

Prueba
redes móviles
4G

50 %
rebaja tarifaria
sector
empresarial

Tests with
4G

Prices have been going down with time

Test of Home
Internet Conections

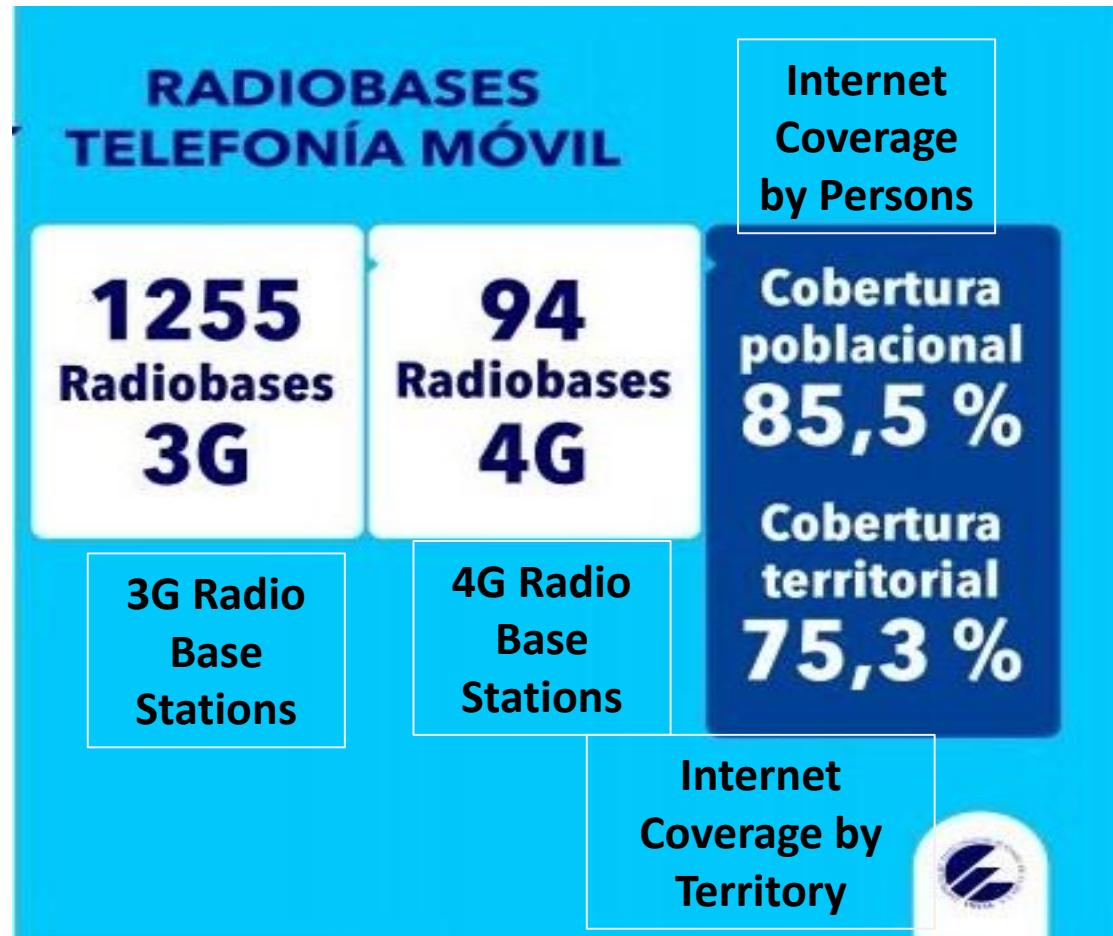
Home
Internet
Conections

Internet in
Mobile
Phones
(3G)



Evolution of Telecom and Internet Cuba in late 2018 and 2019

At the End of 2019



Evolution of Telecom and Internet Cuba in late 2018 and 2019

JAN
2019

CUBA

THE ESSENTIAL HEADLINE DATA YOU NEED TO UNDERSTAND MOBILE, INTERNET, AND SOCIAL MEDIA USE



11.49
MILLION
URBANISATION:
77%



4.57
MILLION
vs. POPULATION:
40%



6.47
MILLION
PENETRATION:
56%



6.47
MILLION
PENETRATION:
56%



6.41
MILLION
PENETRATION:
56%

Evolution of Telecom and Internet Cuba in late 2018 and 2019

**Conditions favor InsMet towards
the Use of CAP in a New Fashion
National Watch and Warning
System**

Inmediate Plan to Implement CAP in Cuba 2020

- The National Forecast Center of InsMet, as well as the 16 Forecast Departments in Provinces has the mandate to issue Weather Watches and Warnings for their respective territories of responsibility, National or Provincial, in a completely transparent and coordinated way, as it is stated in the National Operational Plan.
- CAP comes as a very useful tool to accomplish that mandate.
- The implementation of CAP in Cuba has been framed into a National Project, already approved by the Scientific Council of InsMet, with the Goal to improve the Weather Watches and Warnings System in the Country along 2020.

Some of the Tasks that have been identified into the Project Plan are the following:

Inmediate Plan to Implement CAP in Cuba 2020



- To Train specialist at InsMet National Forecast Center on the National issuance of CAP Alerts**

- To Establish the Official issuance of CAP Alerts in the InsMet WEB and RSS feeds.**

- To Train specialist at the Provincial Meteorological Centers to issue CAP Alerts for their territory of responsibility.**

Inmediate Plan to Implement CAP in Cuba 2020



- To Begin displaying also Provincial CAP Alerts through the WEB and RSS feeds in the Provincial sites as well as in the InsMet website.**
- To Develop a National App to be installed into Intelligent Phones to automatically display Cuban CAP Warnings, both National and Provincial, as a Push Service through that free App, taking into account the basis of user location.**

Inmediate Plan to Implement CAP in Cuba 2020

A First Step, a Steady Purpose; we are Confident in its Success

sender jose.rubiera@insmet.cu sent 2019-10-09T03:11:50-00:00
status Test msgType Alert scope Public
language es category Met responseType Monitor
event PRUEBA-TEST
urgency Expected severity Unknown certainty Observed
onset 2019-10-09T04:11:50-00:00 expires 2019-10-09T05:11:50-00:00
senderName Centro de Nacional de Pronósticos, Instituto de Meteorología de la República de Cuba, Servicio Meteorológico Nacional
Plantillas de texto de 'headline', 'description', 'instruction'
headline Esta es una PRUEBA-This is a TEST.
description Esta es una Prueba del Sistema de Avisos de Vigilancia y Alerta del Centro Nacional de Pronósticos del Instituto de Meteorología de la República de Cuba, Servicio Meteorológico Nacional.
instruction Esta es una PRUEBA. Ud. no tiene que hacer nada. Si hubiese una Alerta Real, entonces Ud. tendría que tomar acciones de protección según fuera el peligro meteorológico, y seguir las orientaciones de la Defensa Civil.
web http://www.insmet.cu
image uri
image mimeType
contact jefe.turno@insmet.cu
areaDesc Área de Prueba: Provincias occidentales de Cuba, Pinar del Río hasta Matanzas.
circle
geocode
format: lat,long<space>radius
polygon 21.8870,-84.9078 21.8921,-84.6606 21.9125,-84.4519 21.7697,-84.512
format: SW SE NE NW SW (lat,lon points)
ESRI
Google
OSM

INSMET Instituto de Meteorología de la República de Cuba
Quiénes Somos
Pronóstico del Tiempo
... chubascos y lluvias en la región occidental...
Estará nublada la región occidental con algunos chubascos y lluvias. En el resto del país estará parcialmente nublado y se nublará en algunas localidades, con aislados chubascos, lluvias y tormentas eléctricas, principalmente en zonas del interior y sur.
[ver más]
Satélite Radares Perspectiva del Tiempo
Pronóstico Climático
... Se espera un mes de octubre con precipitaciones y temperaturas extremas en la norma o por encima de la norma...
Octubre es, como promedio, uno de los meses más lluviosos del año y con el finaliza el período lluvioso en Cuba. La influencia del anticiclón del Atlántico disminuye considerablemente con respecto a julio y agosto, lo que permite el paso frontal de las ondas y las bajas presiones, así como los sistemas de las ondas frontales, propiciando el incremento de las precipitaciones. La frecuencia de afectación por huracanes a Cuba es la mayor de toda la temporada ciclónica, principalmente en su segunda decada.
[ver más]
Estado de la Sequía
...El 15 % del territorio nacional presentó déficits en sus acumulados...
Mayo se encuentra entre los meses de mayores acumulados de lluvia en general para el país. En esta ocasión, un 15 % de todo el territorio nacional presentó déficits en sus acumulados, catalogados un 1% de severos a extremos, 4 % moderados y el 10 % débiles, ubicados en mayor cuantía, en la provincia de Pinar del Río (figura 10). Un total de 12 municipios presentaron déficits en sus acumulados en más de un 25% de sus áreas. Los más afectados con más de un 50 % son Pinar del Río, Minas de Matahambre y Guane.
[ver más]
Canal RSS
XML
Eventos
CAP
Otros Sitios
Sociedad Meteorológica de Cuba
Organización Meteorológica Mundial OMM
Página de Sequía del Proyecto (UNESCO) Friend-Amigo
Boletín Aero-meteorológico
Revista Cubana de Meteorología

Thank you, Muchas Gracias

José Rubiera, Ph.D

Head of National Project:
"Improving Weather Watches and Warnings
Processes in Cuba"



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