

CAP Experiences and Perspectives for its Rapid Implementation in Cuba



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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.
- Immediate Plan to Implement CAP in Cuba in 2020.

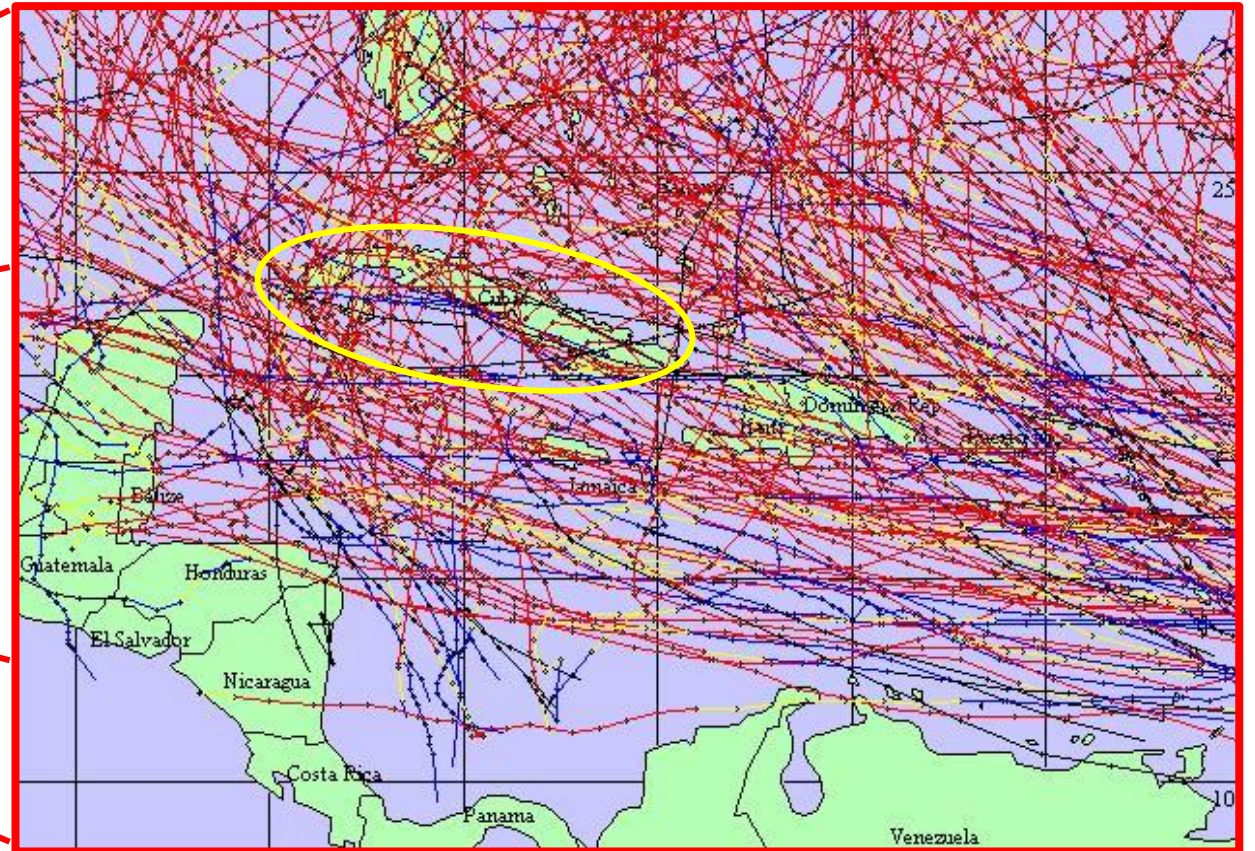
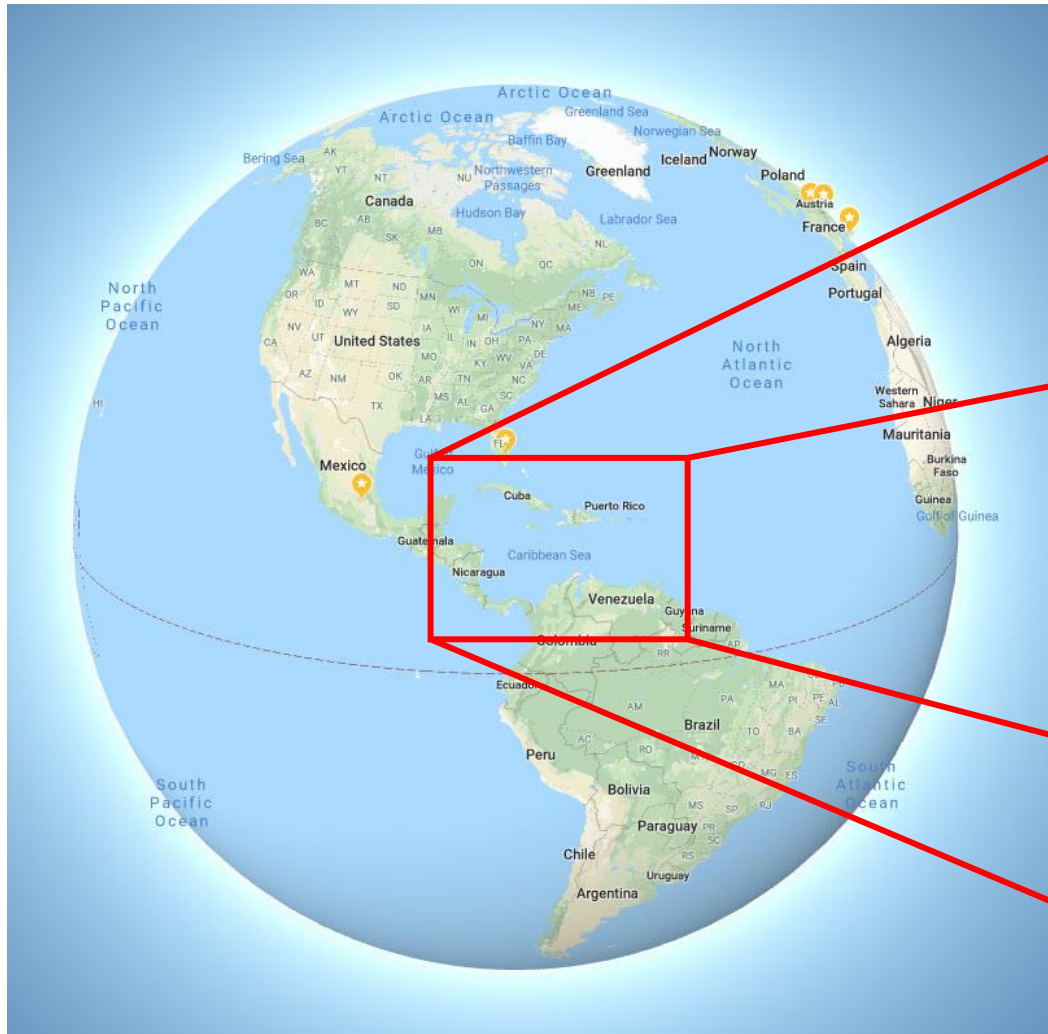
Overview on Cuba



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.

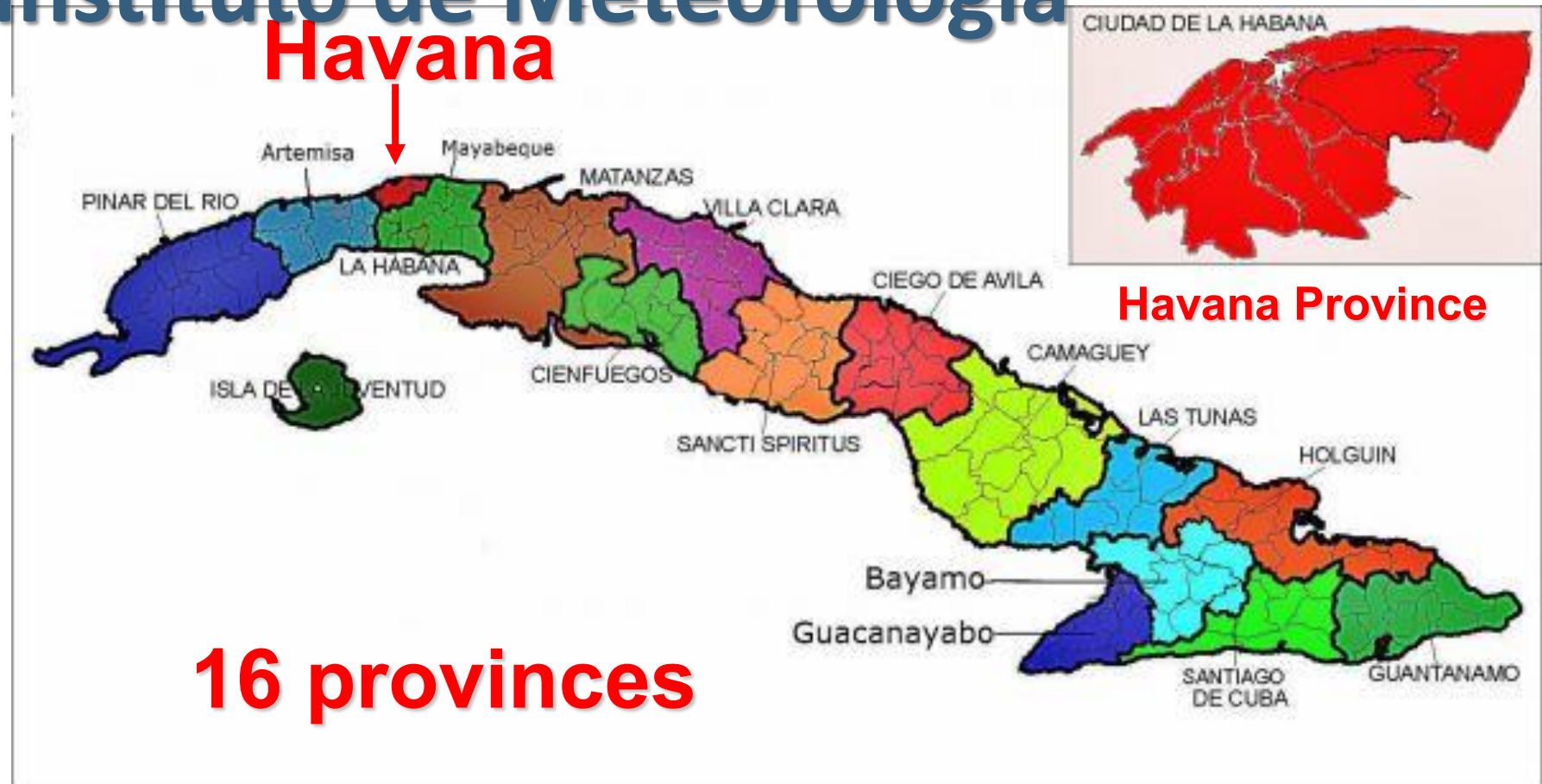


Cuban National Meteorological Service: Instituto de Meteorología

Havana

**1 National
Meteorological
Center**

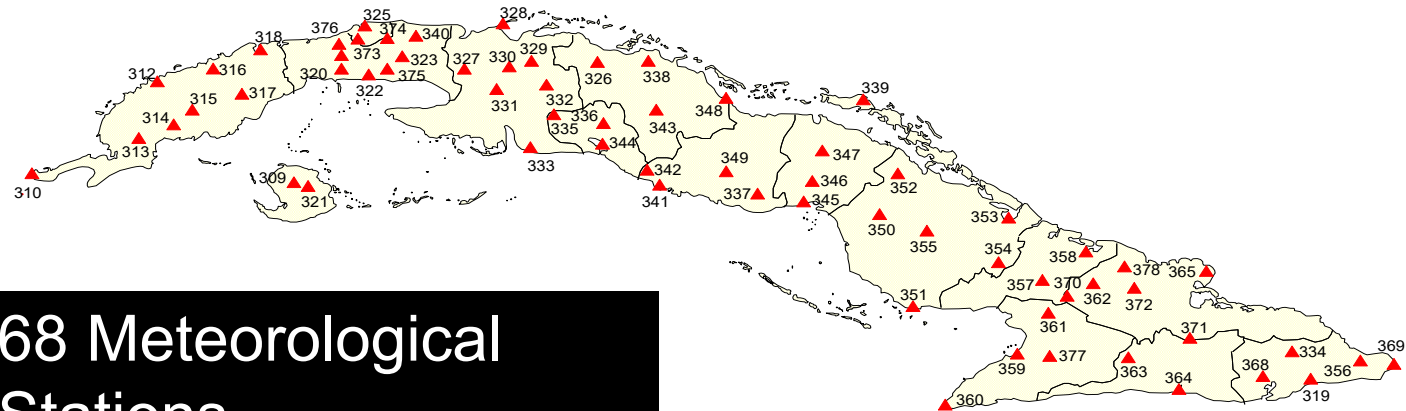
**16 Provincial
Meteorological
Centers**



Cuban National Meteorological Service: Instituto de Meteorología

WEATHER STATION NETWORK IN CUBA

RED DE ESTACIONES METEOROLOGICAS

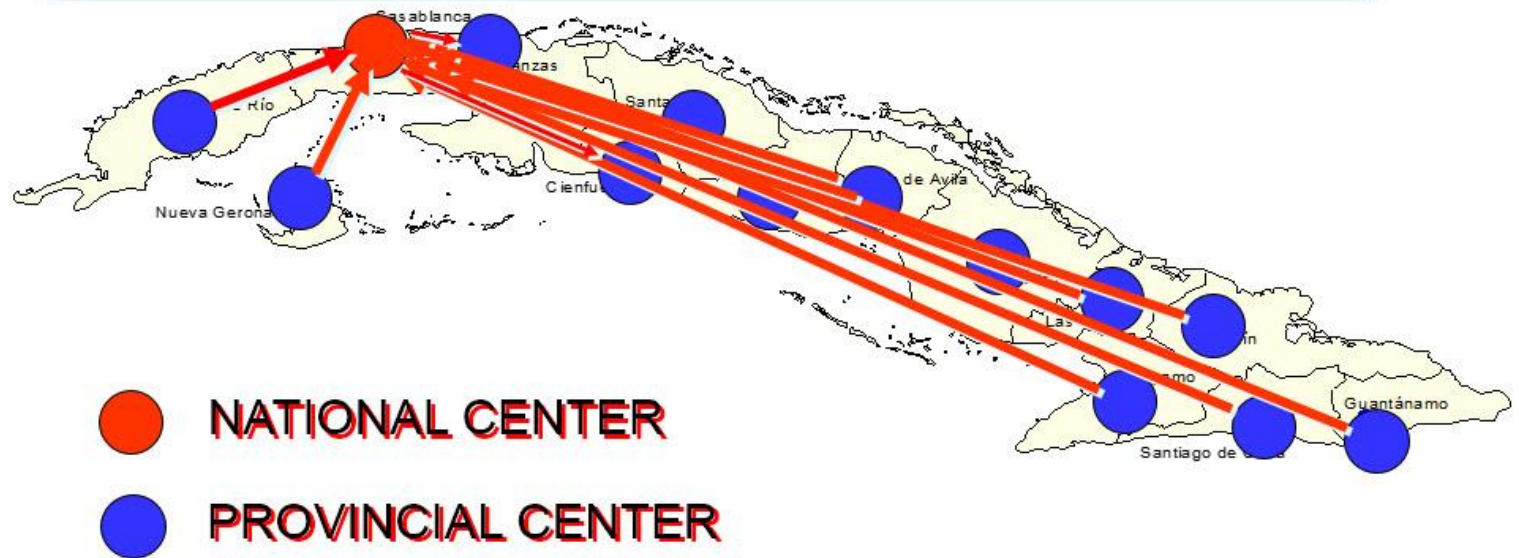


68 Meteorological
Stations
1 Upper Air Sounding
Station
2 Satellite Earth
Station

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

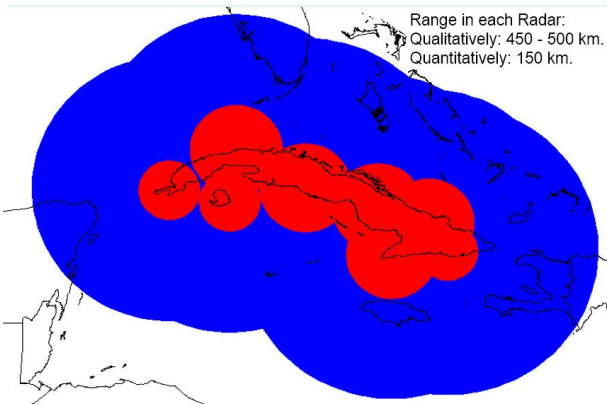
NATIONAL METEOROLOGICAL TELECOMMUNICATION NETWORK IN CUBA



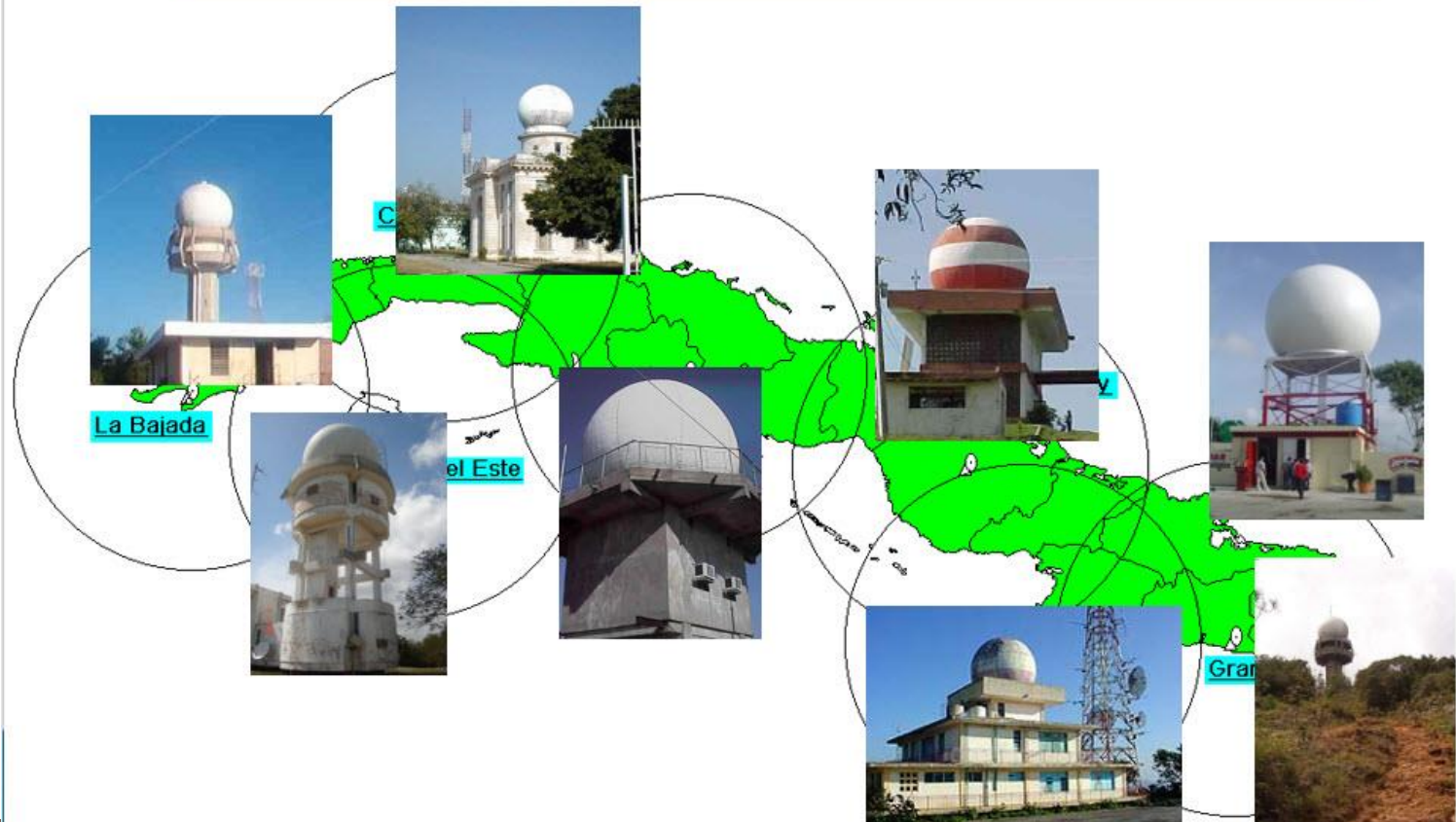
Cuban National Meteorological Service: Instituto de Meteorología

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

RADAR NETWORK COVERAGE IN CUBA



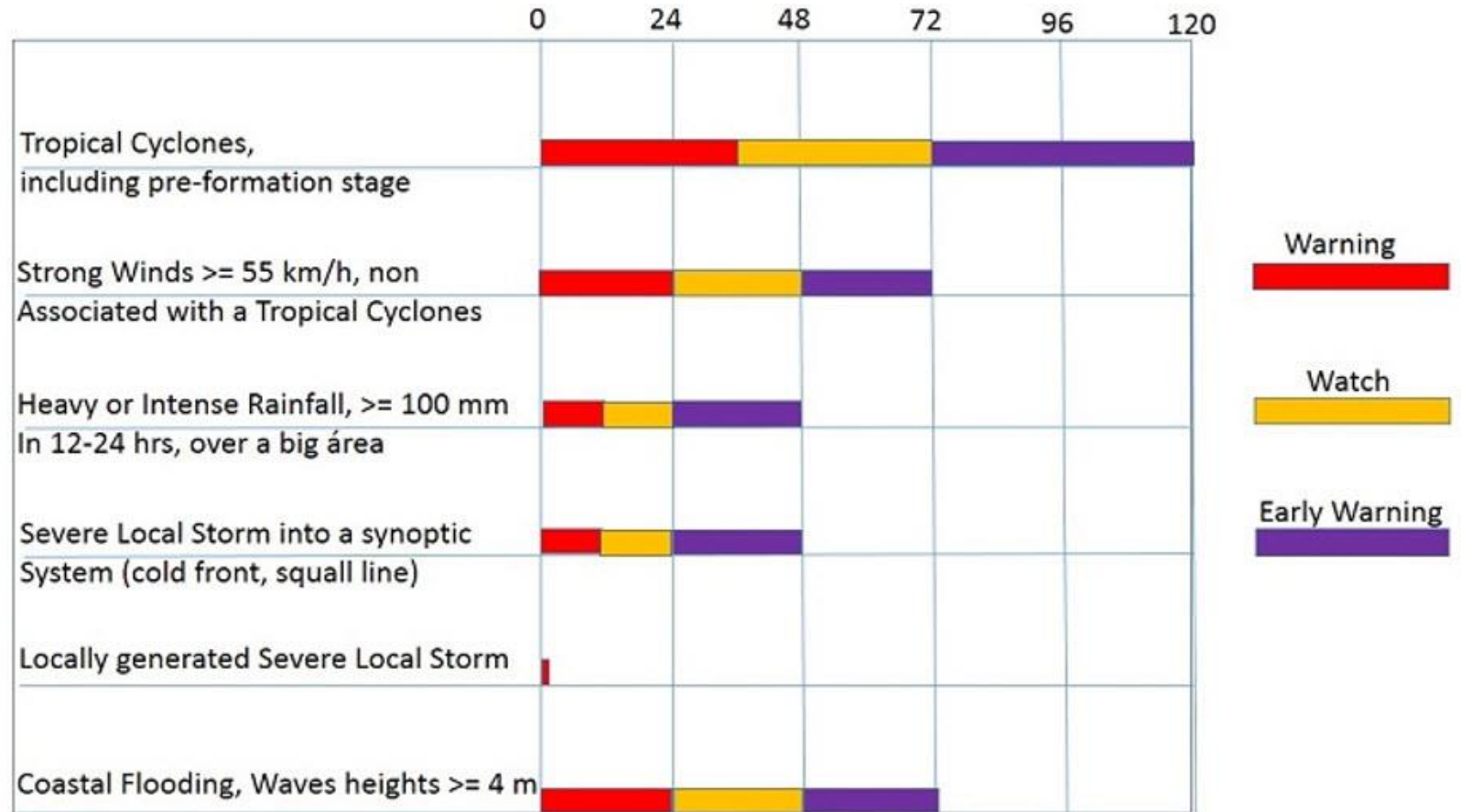
WEATHER RADAR NETWORK COVERAGE IN CUBA



Cuban National Meteorological Service: Instituto de Meteorología



Why CAP Implementation is a Need in Cuba?

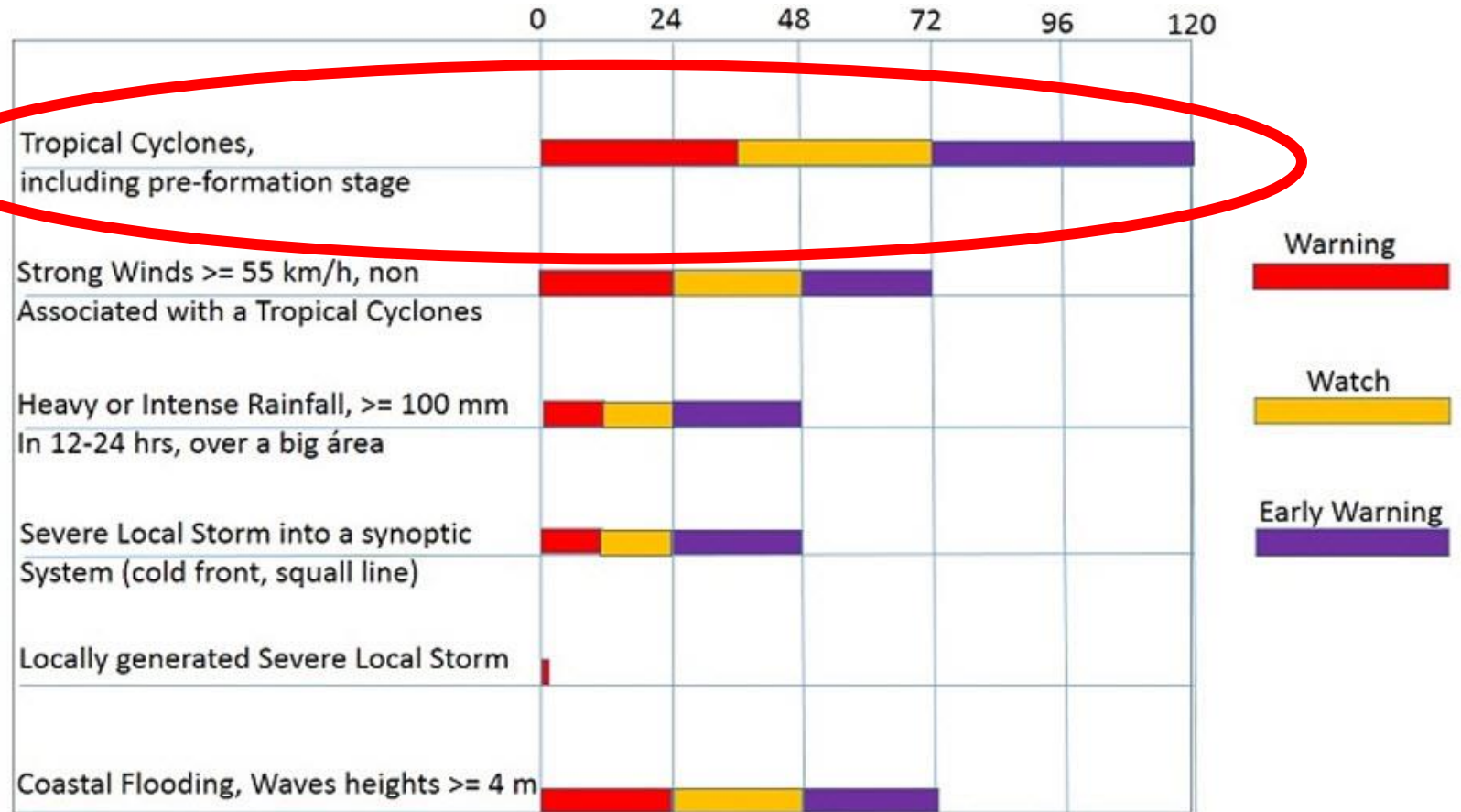


**Leading Time for
Watches and
Warnings in Cuba**

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 huracanes)

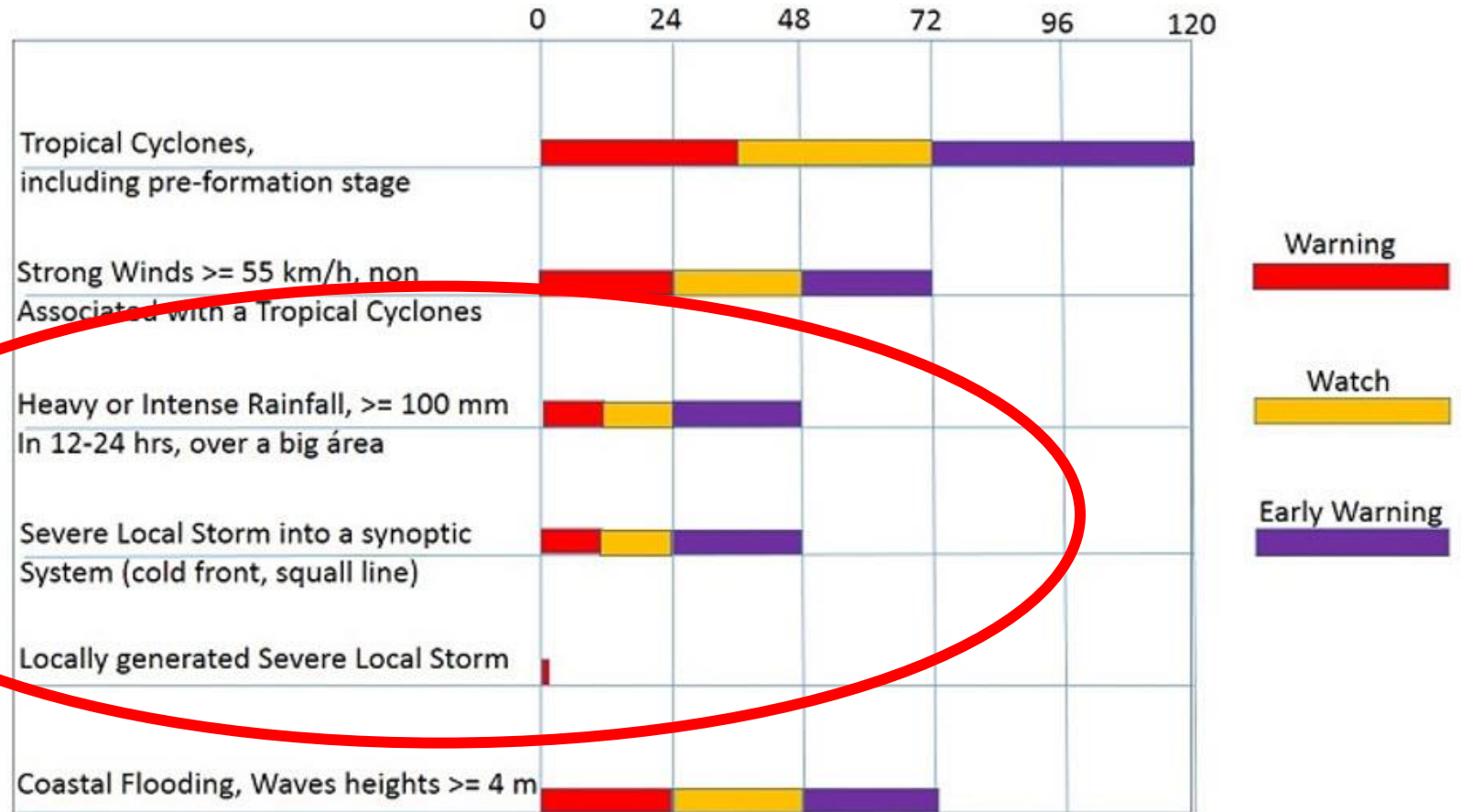
Leading Time for Watches and Warnings in Cuba



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

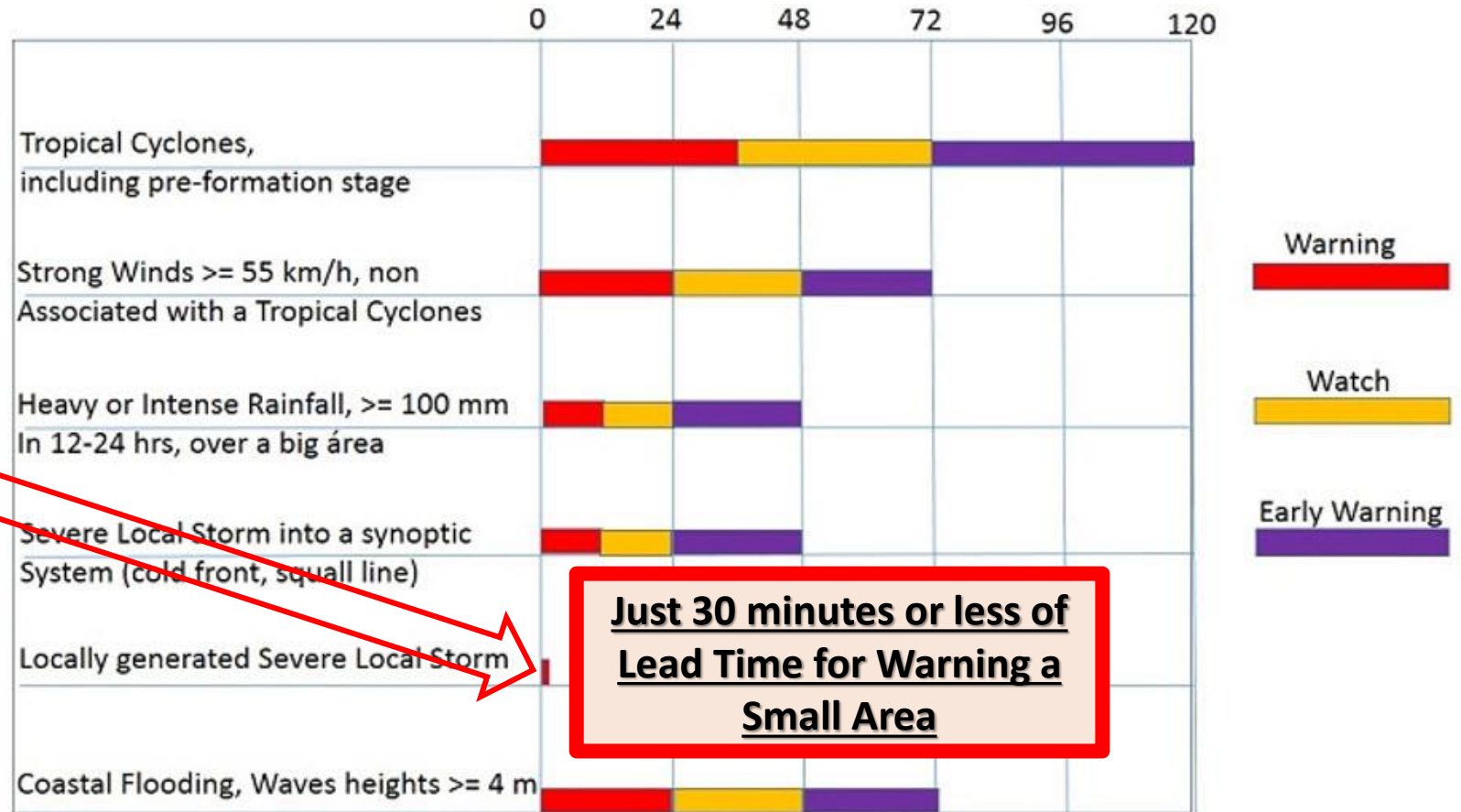
Leading Time for Watches and Warnings in Cuba



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Leading Time for Watches and Warnings in Cuba

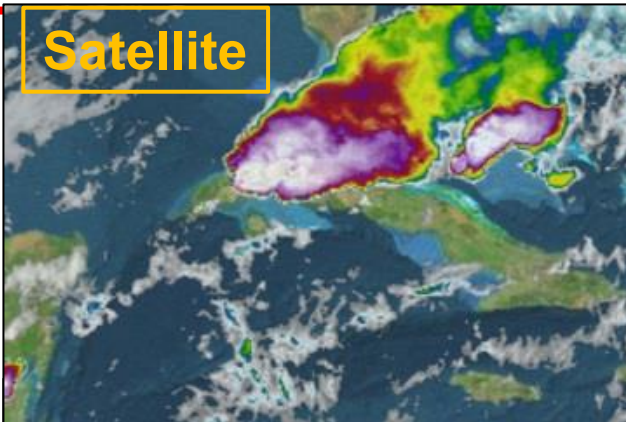


Just 30 minutes or less of Lead Time for Warning a Small Area

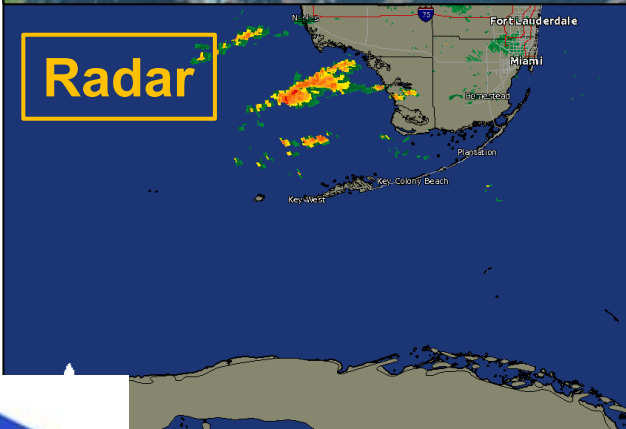
Why CAP Implementation is a Need in Cuba?

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.

Satellite

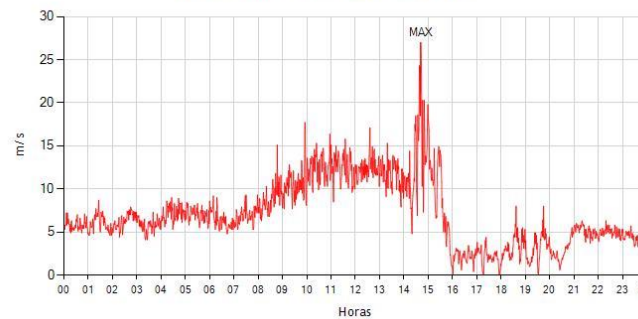


Radar



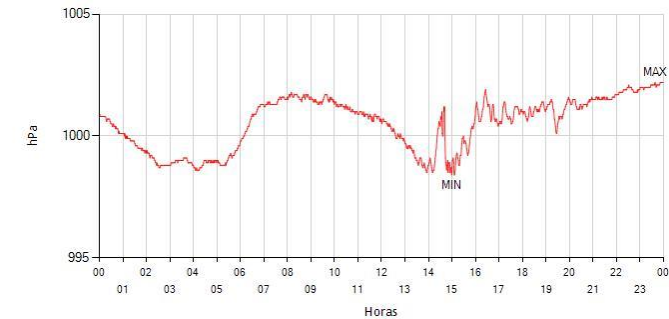
This severe local storm developed rapidly just in front of Havana.
Only a 20-min lead time to warn.... of course, the warning couldn't go through..... Nobody received it before the event.

Velocidad del Viento del 29 de abril de 2015
Mínimo: 0.0 Promedio: 7.1, Máximo: 27.0, Desviación Estándar: 3.9



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

Presión atmosférica del 29 de abril de 2015
Mínimo: 998.4 Promedio: 1000.5, Máximo: 1002.2, Desviación Estándar: 1.1



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**

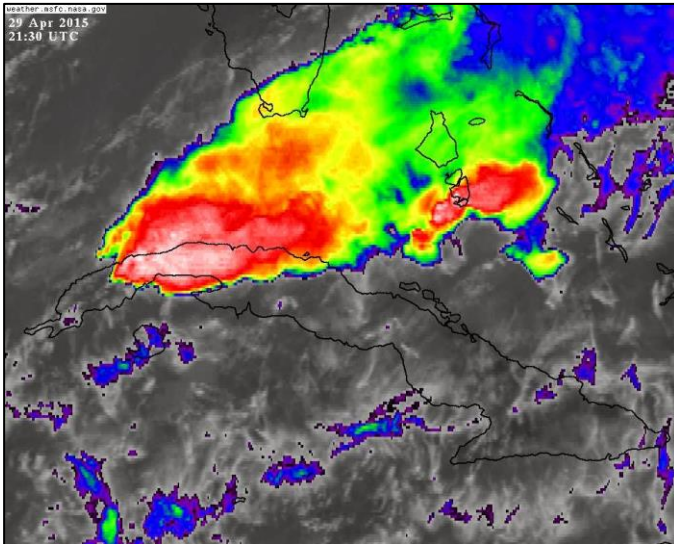


Why CAP Implementation is a Need in Cuba?

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**



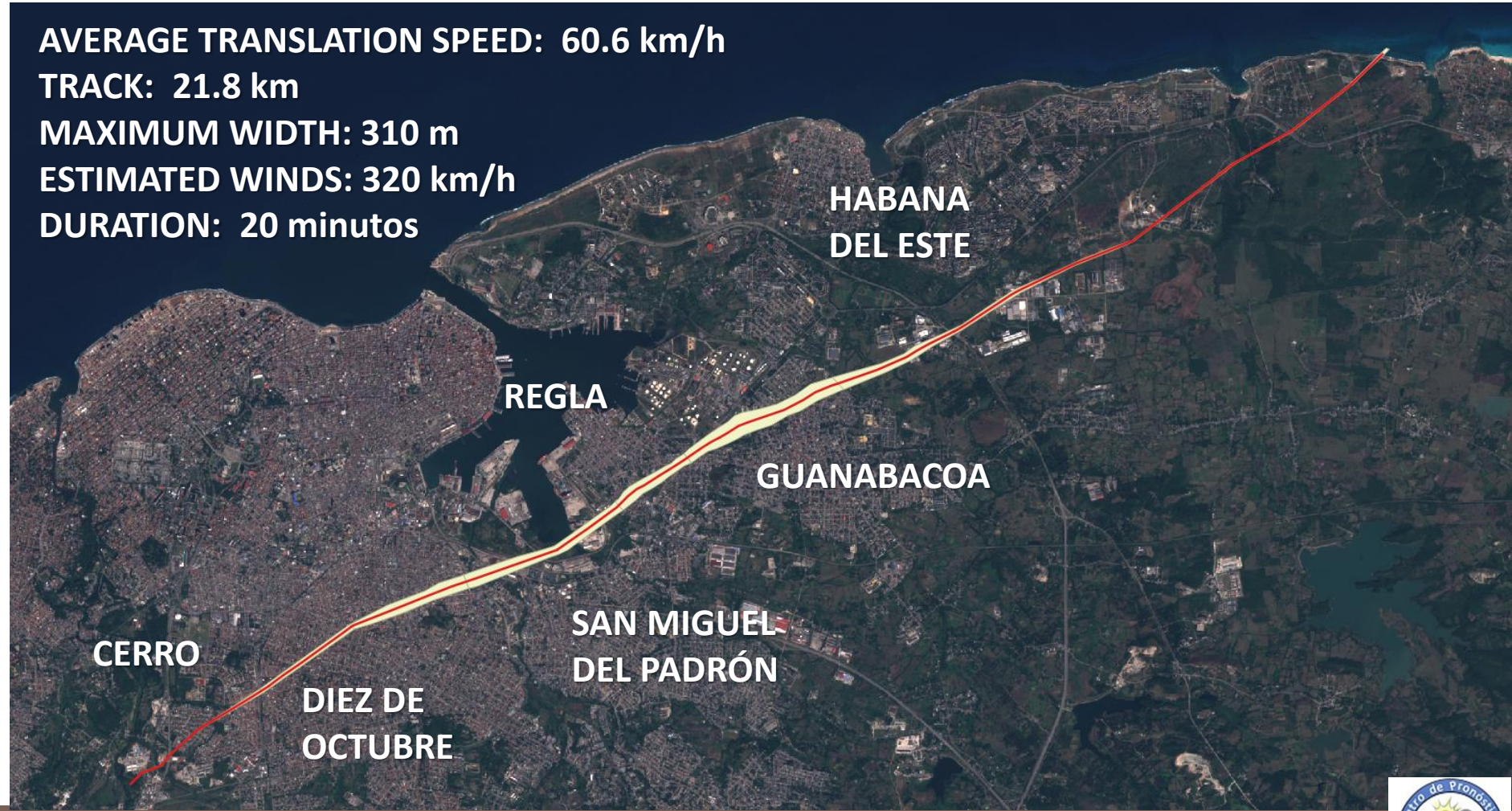
**Havana completely
under water**

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

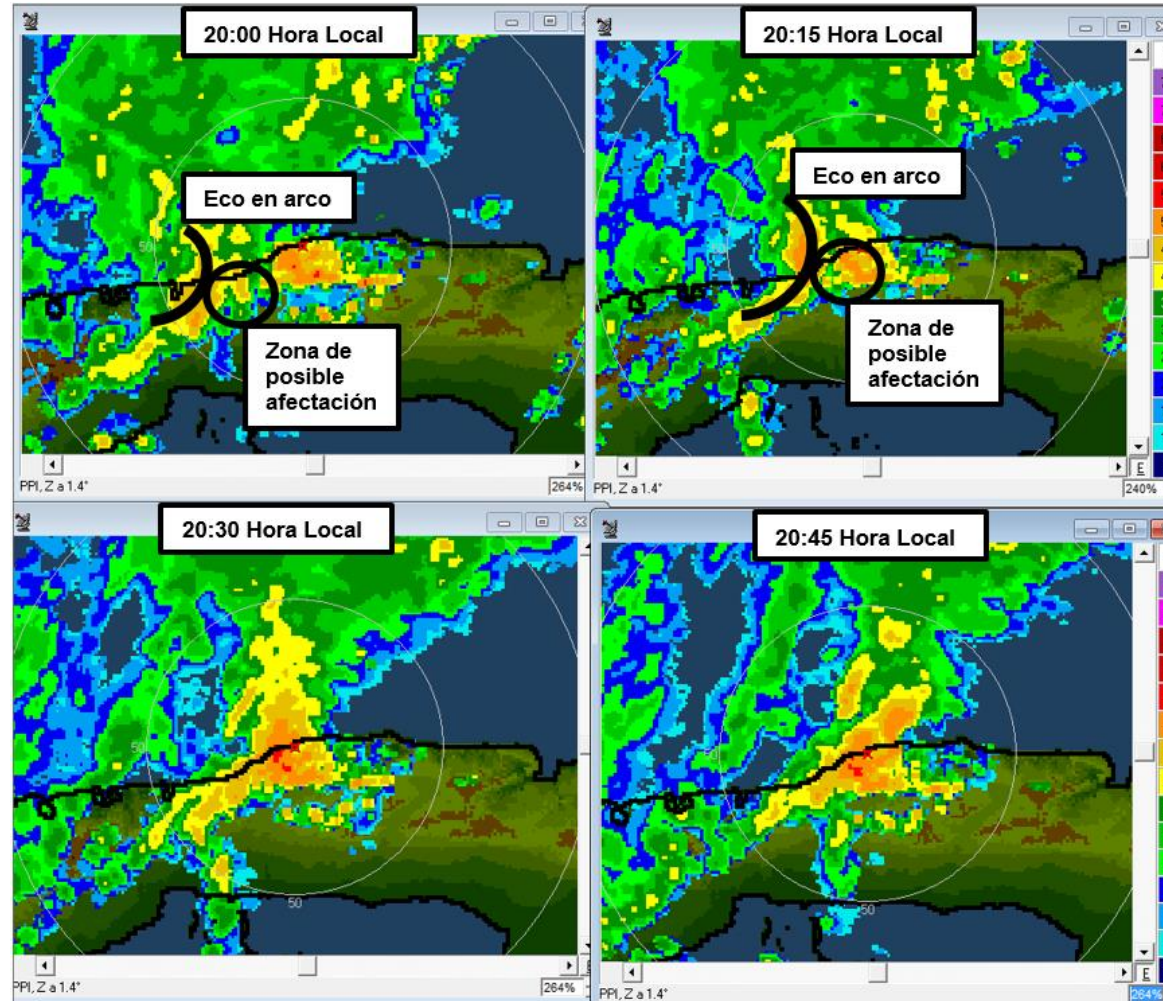
There was NO WARNINGS, other than general conditions favored severe thunderstorm áreas to develop in Western Cuba



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 momento, 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

VÍAS DE ACCESO A INTERNET

Primer
semestre
2019

Million Mobile Lines

5.56 millones
líneas móviles

2.5 millones
habilitados
con acceso
a datos

Million with Data Access

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

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



Prices have been going down with time

Test of Home Internet Conections

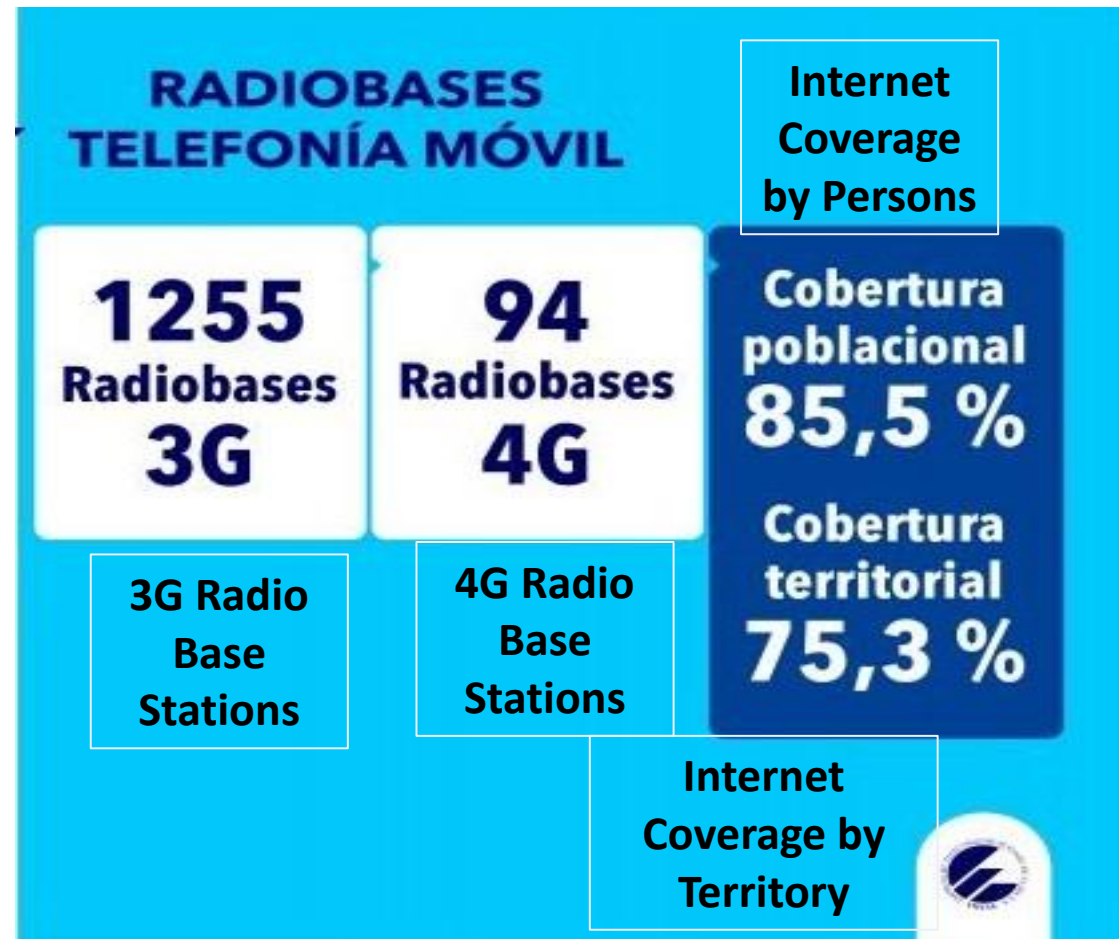
Home Internet Conections

Internet in Mobile Phones (3G)

Tests with 4G

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



TOTAL
POPULATION



**11.49
MILLION**

URBANISATION:

77%

MOBILE
SUBSCRIPTIONS



**4.57
MILLION**

vs. POPULATION:

40%

INTERNET
USERS



**6.47
MILLION**

PENETRATION:

56%

ACTIVE SOCIAL
MEDIA USERS



**6.47
MILLION**

PENETRATION:

56%

MOBILE SOCIAL
MEDIA USERS



**6.41
MILLION**

PENETRATION:

56%

SOURCES: POPULATION: UNITED NATIONS; U.S. CENSUS BUREAU; MOBILE: GSMA INTELLIGENCE; INTERNET: INTERNETWORLDSTATS; ITU; WORLD BANK; CIA WORLD FACTBOOK; EUROSTAT; LOCAL GOVERNMENT BODIES AND REGULATORY AUTHORITIES; MIDEASTMEDIA.ORG; REPORTS IN REPUTABLE MEDIA; SOCIAL MEDIA: PLATFORMS' SELF-SERVE ADVERTISING TOOLS; PRESS RELEASES AND INVESTOR EARNINGS ANNOUNCEMENTS; ARAB SOCIAL MEDIA REPORT; TECHRASA; NIKI AGHAEL; ROSE RU. (ALL LATEST AVAILABLE DATA IN JANUARY 2019).

Hootsuite



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**

Immediate 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.

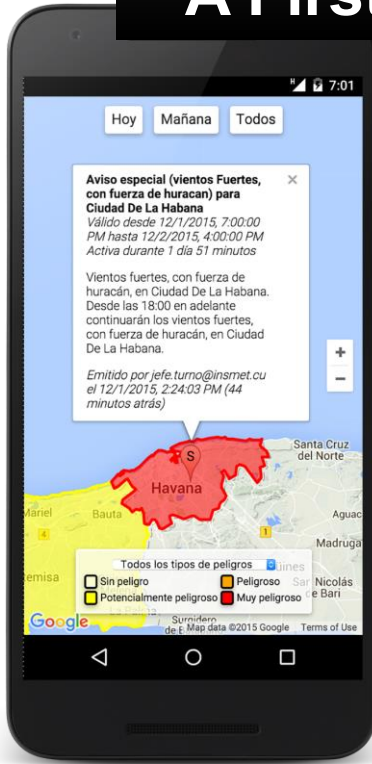
Immediate Plan to Implement CAP in Cuba 2020



- ☐ 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.

Immediate 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

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 Real, entonces Ud. tendría que tomar acciones de preparación fuera el peligro meteorológico, y seguir las orientaciones de la Defensa Civil.

instruction
Esta es una PRUEBA. Ud. no tiene que hacer nada. Si hubiese Alerta Real, entonces Ud. tendría que tomar acciones de preparación fuera el peligro meteorológico, y seguir las orientaciones de la Defensa Civil.

web http://www.insmet.cu

image uri

image mimeType

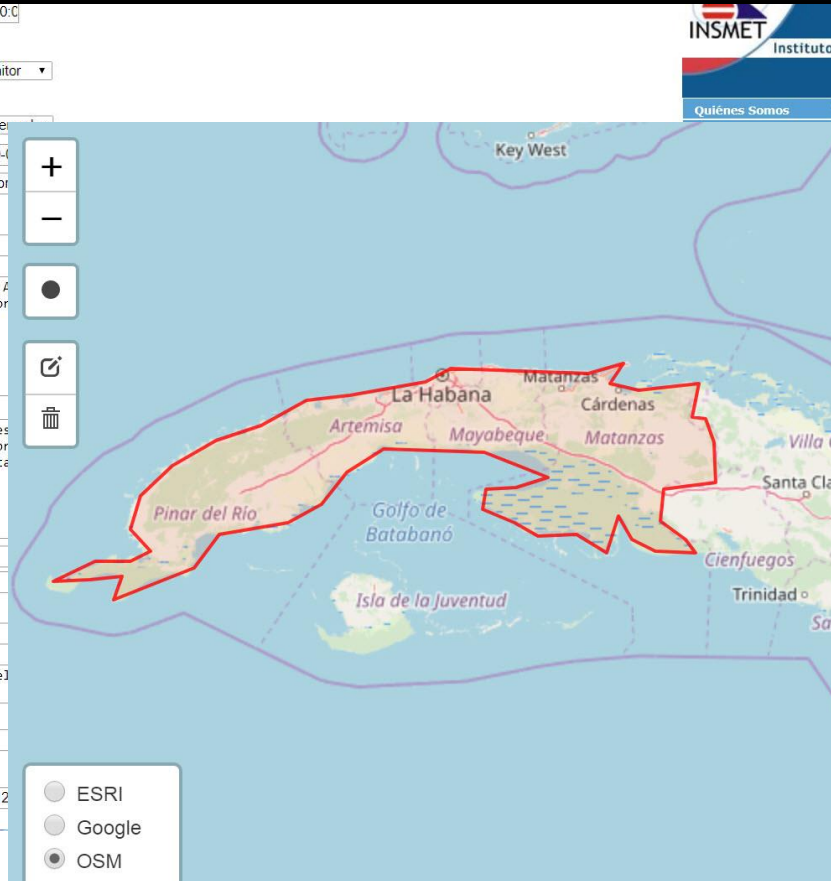
contact jefe.turno@insmet.cu

areaDesc
Área de Prueba: Provincias occidentales de Cuba, Pinar del Río hasta Matanzas.

circle
format: lat,long<space>radius

geocode
format: 'type' = 'value'

polygon
21.8870,-84.9078 21.8921,-84.6606 21.9125,-84.4519 21.7697,-84.5121
format: SW SE NE NW SW (lat,lon points)



INSMET Instituto de Meteorología de la República de Cuba

Martes, 8 de Octubre de 2019

Inicio Mapa del Sitio Contacto Imprimir

Quénes 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]

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 él finaliza el período lluvioso en Cuba. La influencia del anticiclón del Atlántico disminuye considerablemente con respecto a julio y agosto, lo que unido al paso frecuente de las ondas y las bajas tropicales, así como de los primeros sistemas frontales, propicia 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 decena.
[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

Evento

Otros Sitios

Sociedad Meteorológica de Cuba

Organización Meteorológica Mundial

Página de Sesión del Proyecto (UNESCO) Friend-Amigos

Boletín Agro-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"



rubiera.jose@gmail.com