



New Caledonia and Wallis-et-Futuna Weather service and Tropical cyclone warning system

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Geography

- **New Caledonia**
- Population (2017 estimate) : 278,500
- Superficy : 18,000 km²
- divided into 3 provinces and 33 municipalities



2000 km



- **Wallis-et-Futuna**
- Population (2018 census) : 11,500
- Superficy : 140 km²

Tropical cyclones consequences

Last severe tropical cyclone that landed in New Caledonia was COOK in 2017.
Last severe tropical cyclone that hit the Noumea region was ERICA (2003).

However during the last decades, few people died because of cyclones.

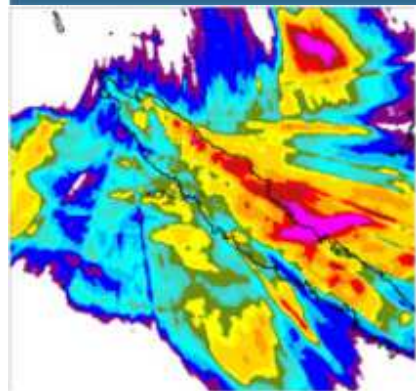
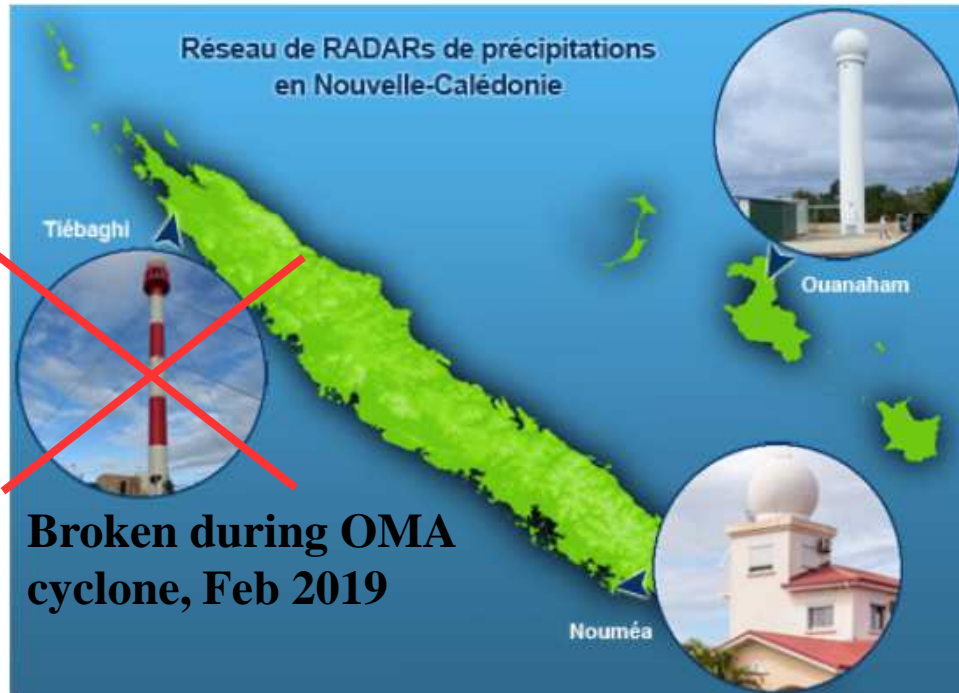
Generally speaking, fatalities due to weather events are caused :

- by river flooding,
- by landslides : for example in november 2016, 8 people died in Houaïlou (it was NOT a tropical cyclone).



Supporting technology : Observation

RADAR and LIGHTNING networks (only in New Caledonia)



Real time reflectivity +
Cumulative precipitation
estimation



Real time and cumulative
lightning plot

Supporting technology : NWP models

Deterministic :

- ▶ EC (14 km resolution)
- ▶ AROME (EC forcing) (2,8 km resolution)
- ▶ MFWAM wave-swell forecast (11 and 22 km resolution)
- ▶ GFS 28 km resolution
- ▶ Access-R 12 km resolution
- ▶ ARPEGE 55 km resolution

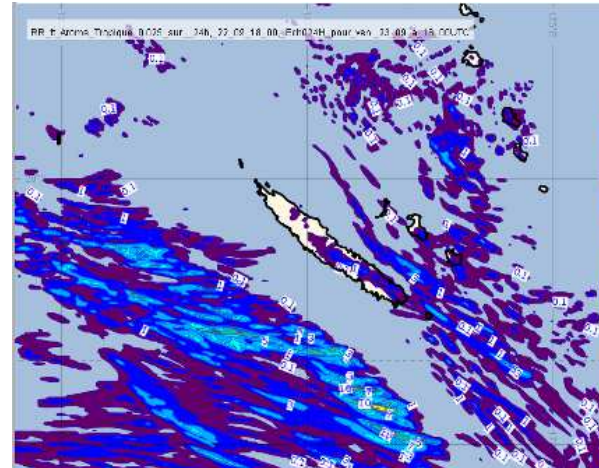
Probabilistic :

- ▶ EPS (ENSgram, plumes, Strike Probabilities)
- ▶ GEFS (spaghetti)
- ▶ PE ARP (ARPEGE)

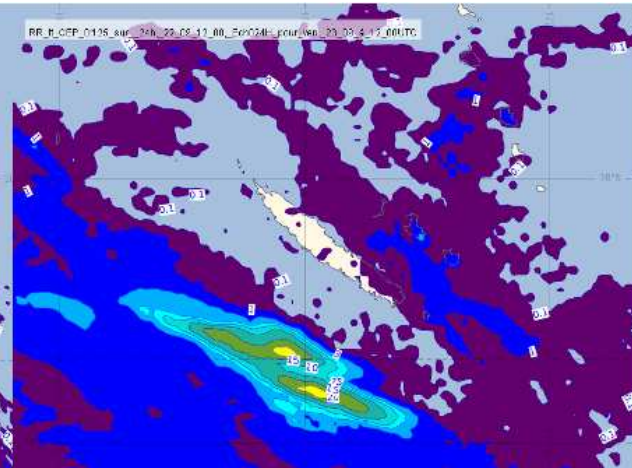
Dynamic :

- ▶ Storm surge (input data : cyclonic track, pressure and wind radii)

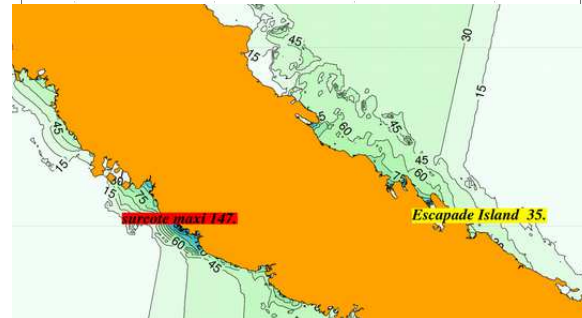
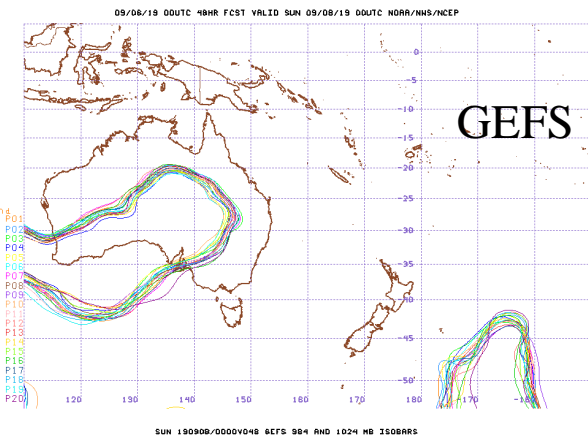
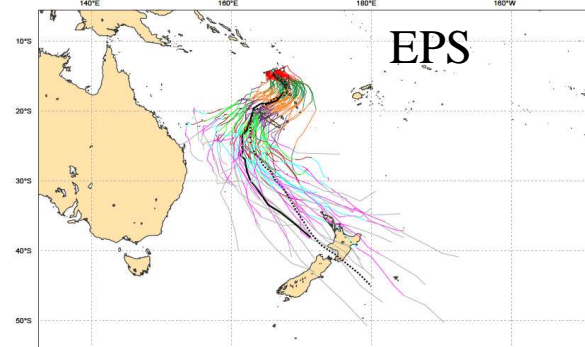
AROME



EC



Date 20190212 12 UTC @ECMWF
Individual trajectories for OMA during the next 240 hours
tracks: thick solid=HRES; thick dot=CTRL; thin solid=EPS members [coloured]
0-24h 24-48h 48-72h 72-96h 96-120h 120-144h 144-168h 168-192h 192-216h 216-240h

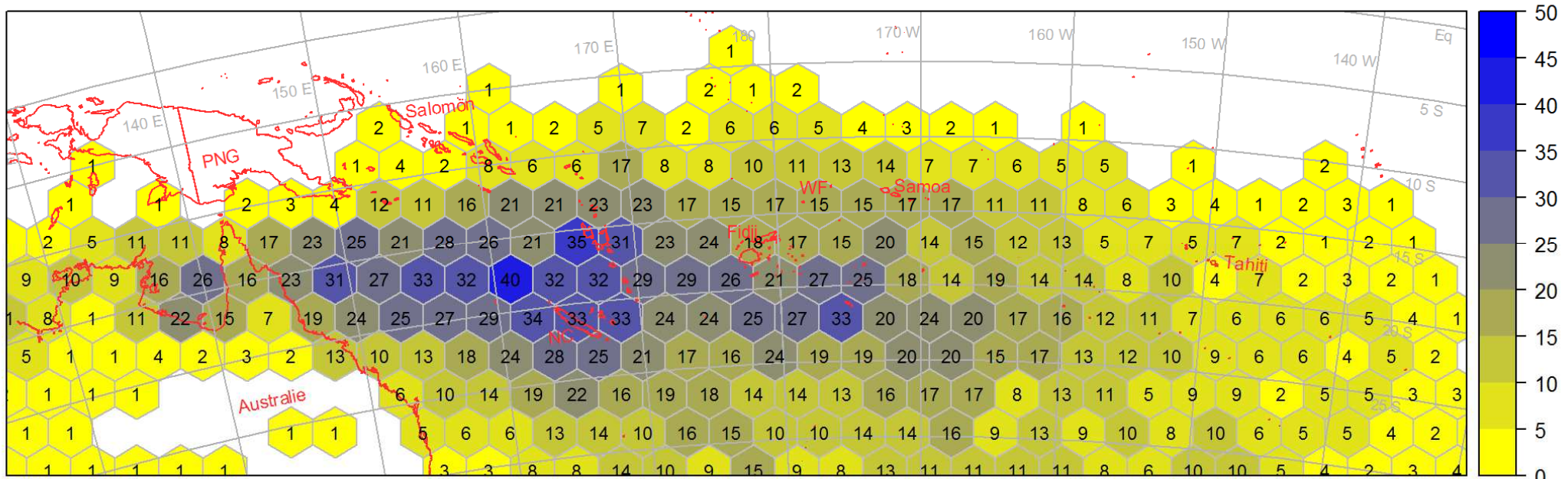


Meteo-France New Caledonia Met service

- Has **no international responsibility** for tropical cyclone watching
- However **watches and monitors tropical activity** over the South-West Pacific ocean
 - to provide **expertise to local authorities** in charge of the cyclone warning system when a tropical cyclone threatens New Caledonia or Wallis-and-Futuna islands
 - to provide **forecasts to mariners and public** over two warning zones (these areas include Vanuatu, Fiji and Samoa Islands)



Southwest Pacific tropical cyclone climatology



Total number of Tropical cyclones (cat 1 or more) in each hexagon ;

Data : SpearTC (Howard Diamond) during 41 seasons (August 1977 to July 2018)

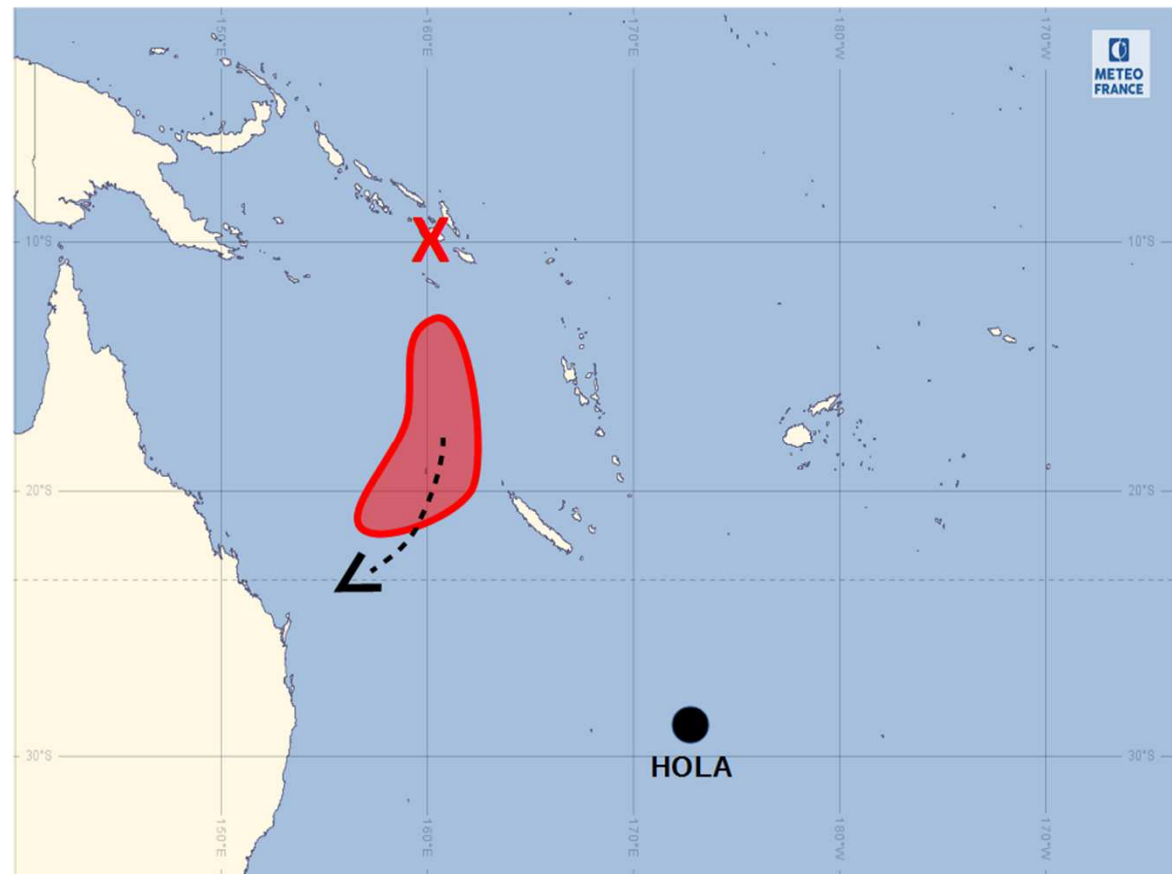
	South West Pacific	New Caledonia area of responsibility	Wallis-et-Futuna area of responsibility
Number of TC cat 3 or more per year	3,9	1,7	0,8
Number of TC cat 1 or more per year	9,8	3,6	1,8

Tropical cyclone activity and cyclogenesis

New product since January 2018

- Objectives :
 - **Monitoring** existing Tropical phenomena (links to RSMC for more information),
 - **Forecasting** developing tropical systems.
- Domain : South West Pacific
- Frequency : daily
- Forecast period : until 7 days
- Format : map and text

Example on 11 March 2018 :
(future Tropical Cyclone Cat 1 LINDA
and existing Tropical Cyclone Cat 2 HOLA)



<http://www.meteo.nc/nouvelle-caledonie/cyclone/bulletin>

Tropical cyclone warning

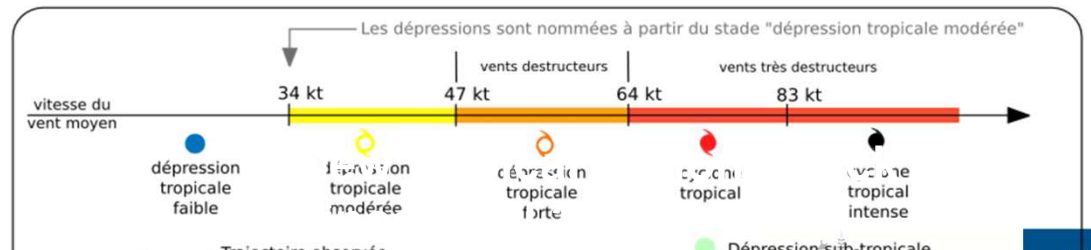
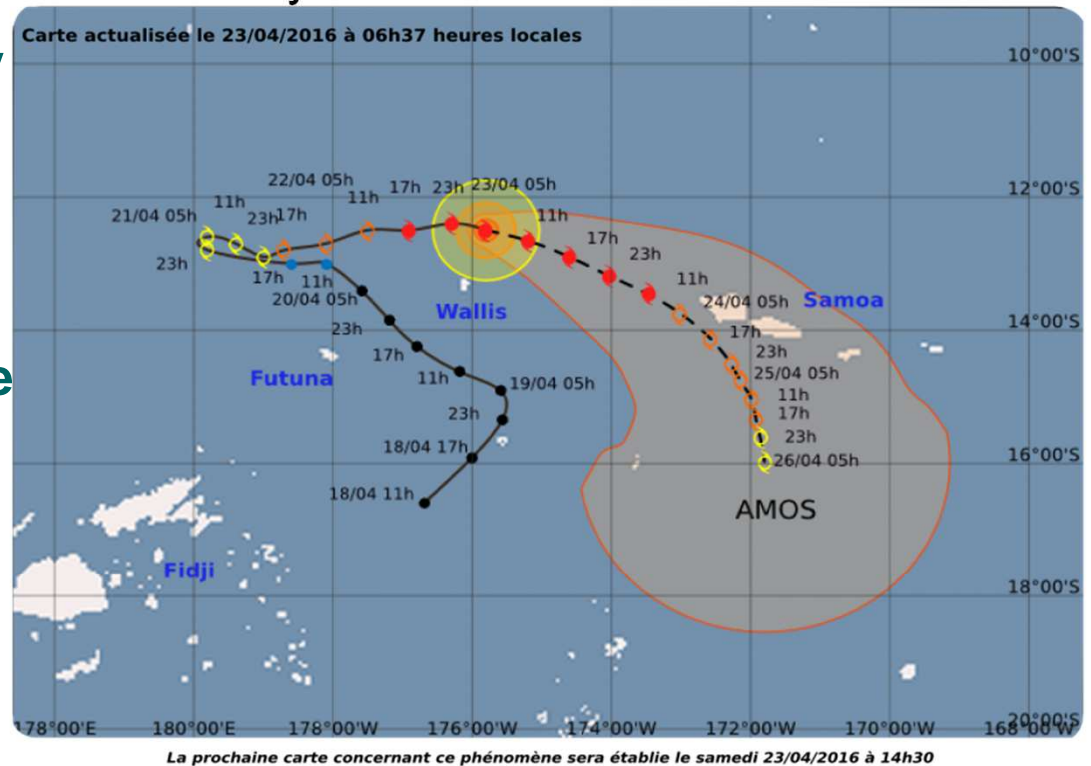
When a tropical storm is moving next to or inside the warning zones :

— New Caledonia Met Service **releases information about the phenomenon in special publications every 6 hours :**

- ▶ Tropical cyclone advisory
- ▶ Tropical cyclone bulletin
- ▶ Tropical cyclone track map
- ▶ Marine high sea gale, storm and hurricane force wind warning

Marine warnings are in English too.

- Providing details about
 - ▶ observed and forecasted
 - ▶ location, intensity,
 - ▶ strongest winds and gales



TC tracks are released on :

<http://www.meteo.nc/nouvelle-caledonie/cyclone/phenomenes-en-cours>

or

<http://www.meteo.nc/wallis-et-futuna/cyclone/phenomenes-en-cours>

Cyclone warning sytem

Cyclonic alert level	Chronology	Main advice or consequences
Pre-cyclonic alert (whole country)	Tropical cyclone in the warning area Or Tropical cyclone possible impact within 48 hours	Keep informed. Start to prepare.
Alert 1 (by municipality)	Possible impact within 18 hours	Finalise preparation. Progressively stop economical activity
Alert 2 (by municipality)	Possible impact within 6 hours	Stop all activities. Go home or take shelter.
Safeguard phase (by municipality)	Tropical cyclone has moved away, but there are still dangers	Let specialized services clean the roads, restore water, electricity and telephone networks. Be cautious. Restart normal activity.

- Based only on the criterium of wind intensity (>47 kt, tropical cyclone cat 2 or more)
- Numbers indicates the chronology of the danger, not intensity.
- Cyclonic alert is under Civil Protection responsibility. Météo-France gives only the meteorological expertise.

Adaptative operational shift

• Normal :

- 5 am to 5 pm Senior Forecaster shift,
- 24h/24 General and Marine Forecaster,
- 24h/24 Aviation Forecaster + 12h/24 Aviation Forecaster,
- 10h/24 General Forecaster in Wallis,
- 5 am to 5 pm IT Support Specialist for dissemination supervision.

• Cyclonic Prealert :

- 24h/24 Senior Forecaster instead of 12h/24,
- additional General Forecaster in the morning,
- decision making help by Forecast department Head.

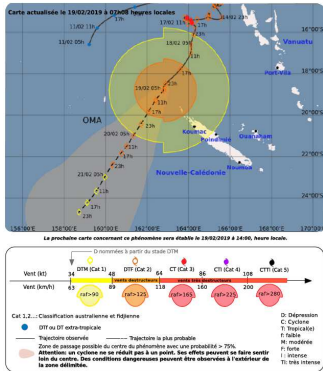
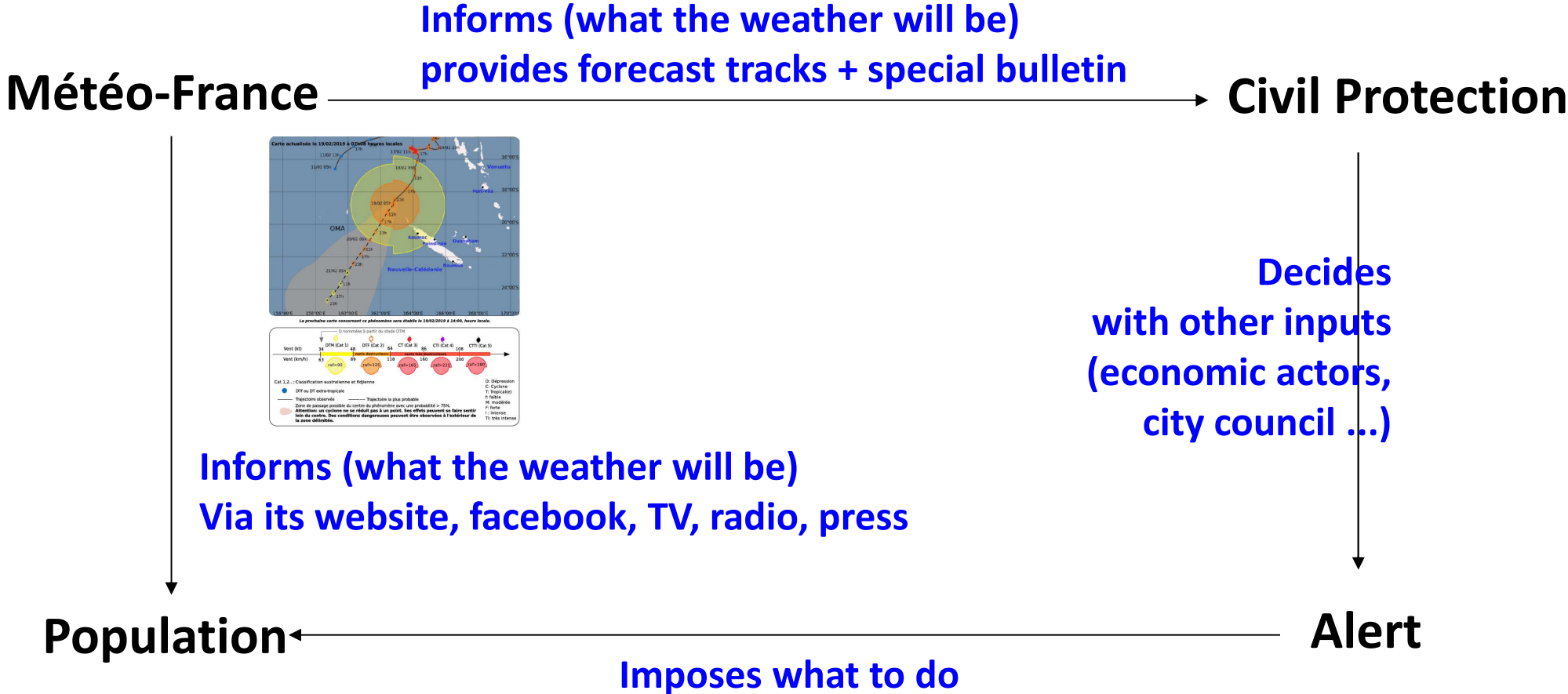
• Cyclonic Alert 1 or 2 :

- additional help by Management or Climatology department for crisis communication,
- 24h/24 IT Support Specialist for dissemination supervision, instead of 12h/24.

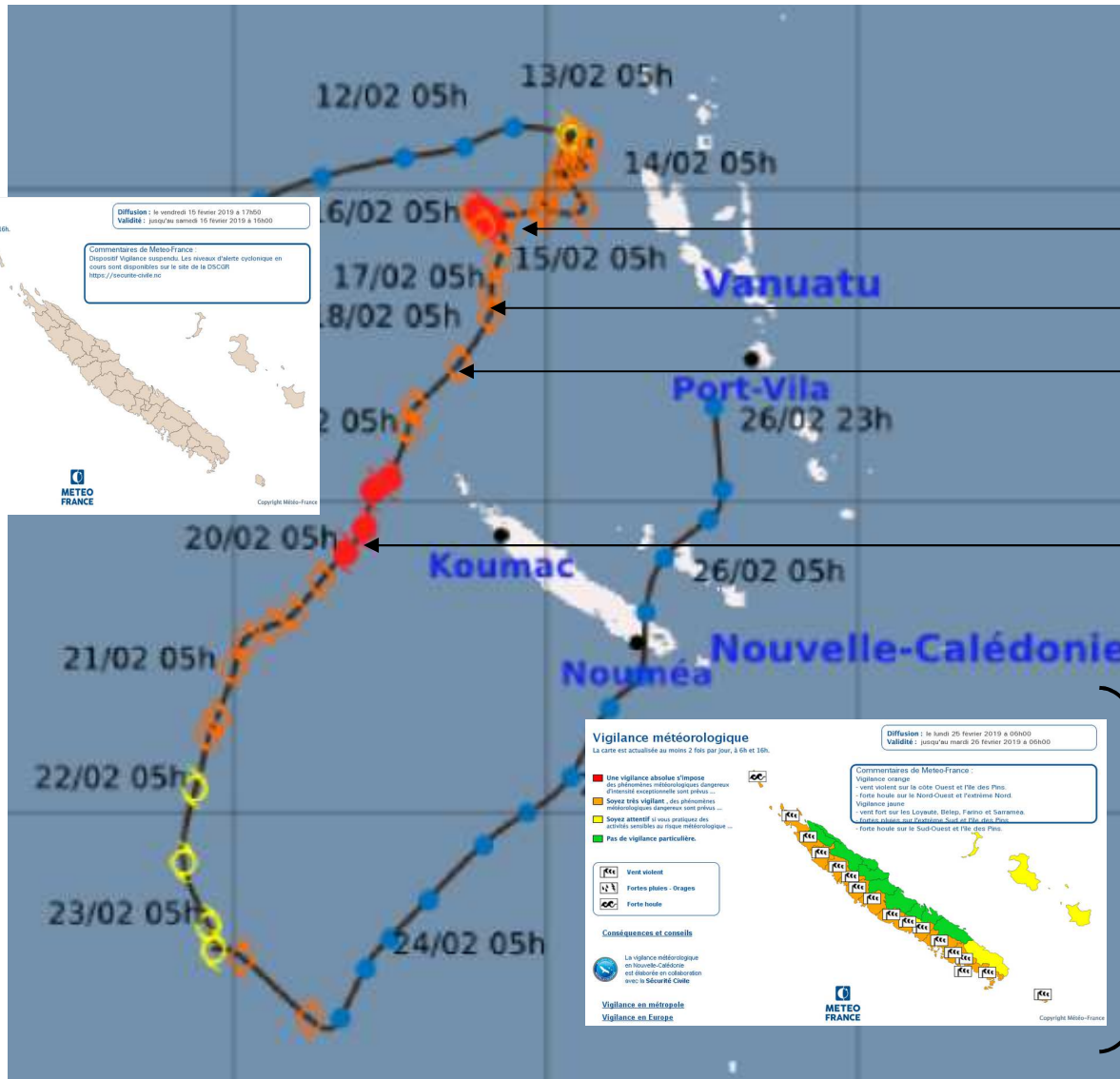
Thank you for your attention !

Have you some questions ?

Cyclonic alert : 2 main actors



Track of TC category 3 OMA and associated alerts



Pre-alert

Alert 1 on the north

Alert 2 on the far north

Safeguard phase

Ex-OMA is no more a tropical cyclone category 1 :
Vigilance is in force