



Weather  
and climate  
data for  
resilience

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# **SOFF and HMEI webinar Investment Phase - Madagascar**

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# Extreme conditions

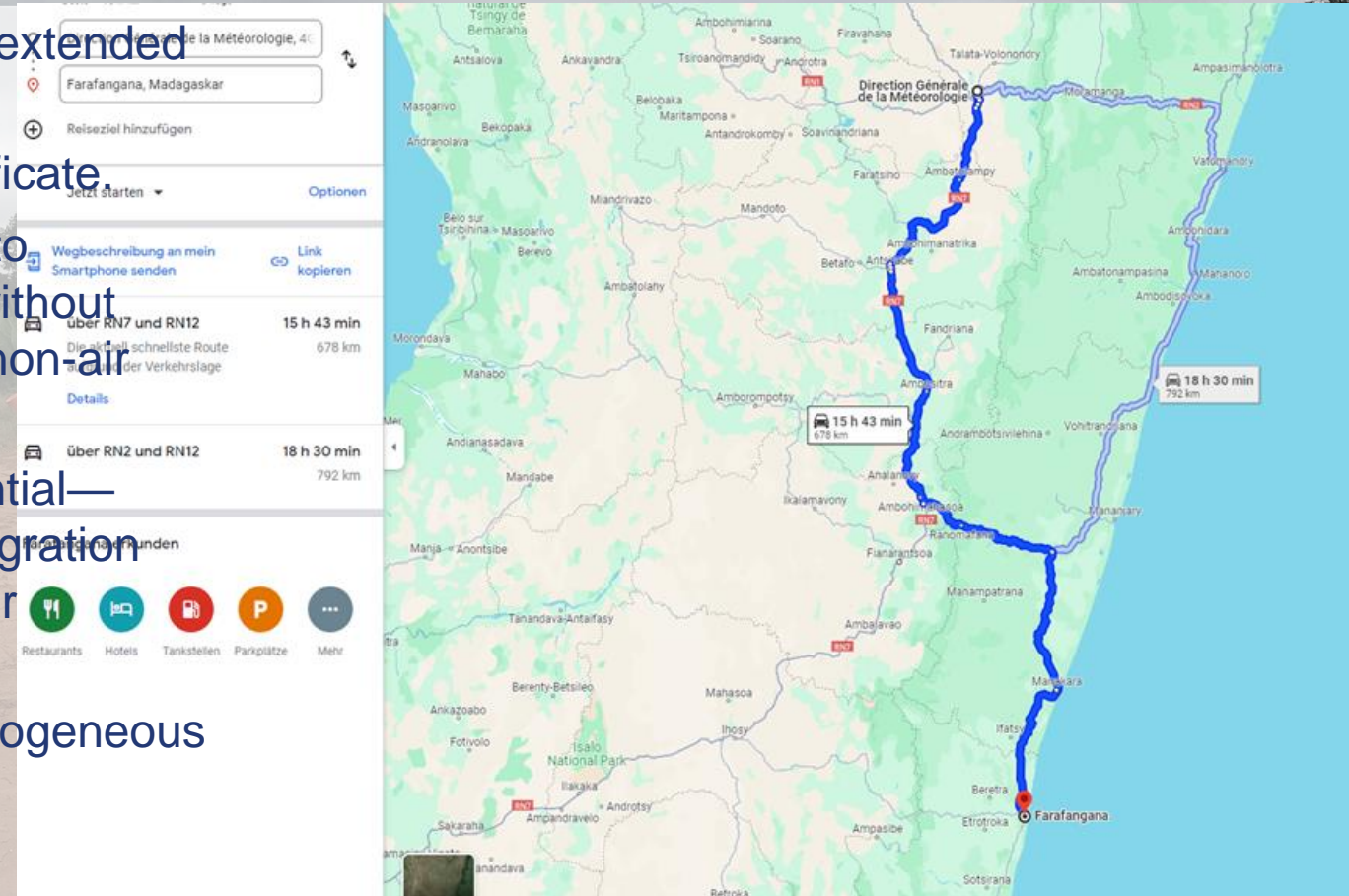
- Very **long distances** to stations, often with poor road conditions and limited accessibility, especially during the rainy season.
- **Extreme weather** events such as heavy rain, floods, strong winds (e.g. tropical cyclones), higher temperature extremes than in Europe, and accelerated corrosion due to vicinity to the ocean must be considered.
- **Limited power and internet access:** systems should support efficient solar power solutions that are resistant to theft, and allow for satellite-based communication as an alternative.





# To be considered in NCP

- Calibration and maintenance cycles must be extended as much as possible.
- Initial delivery must include a calibration certificate.
- Sensors and instruments must be packaged to withstand long and bumpy vehicle journeys without damage and should be storable in uncooled/non-air conditioned environments.
- Modular and versatile system design is essential—supporting easy sensor replacement and integration without proprietary interfaces, data formats, or connectors.
- The network should be planned to be as homogeneous as possible, taking into account the existing infrastructure.





# Examples of one identified challenge – Horizontal Wind

**Ultrasonic anemometers** have many advantages (more accurate, lower starting threshold, usually no false data, low maintenance) but:

- usually **significant power consumption** (even without heating)
- sometimes problems with damages by birds
- solar panels often **get stolen**

**Mechanical anemometers** have a low power consumption but need **regular maintenance** of the ball bearings (cleaning or exchange)!

## **Problem statement:**

- What is easier to achieve: more electrical power or more maintenance?



# Questions/ Requirements

Middle ground of WMO specifications and realistic on the ground solutions:

- Suppliers giving **recommendations** and share experiences regarding **systems installed in remote areas/ areas under more extreme conditions**:
  - What's the minimum criteria when it comes to maintenance activities
  - Recommendations for dusty, hot, windy environment etc. when no daily/weekly cleanings might be possible
  - Adopted training programme
- Provide an **overview of the price ranges** for different sensors and systems, including maintenance costs and effort.
- How should the entire required system (e.g., fences, anti-theft devices, towers, data provision etc.) be handled in the tendering process?
- Would it be possible to have a SOFF Tender Template?