



**METEOROLOGICAL
SERVICE
SINGAPORE**

Country Update Singapore

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OSCAR/Surface course for RA-V
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Outline

- I. Introduction to the country and the NMHS
- II. Physical context of the country
- III. National requirements for observations
- IV. Inventory of current national observing capabilities
- V. Other remarks



1. Introduction to Singapore



1. Mission and Basic Info of NMHS

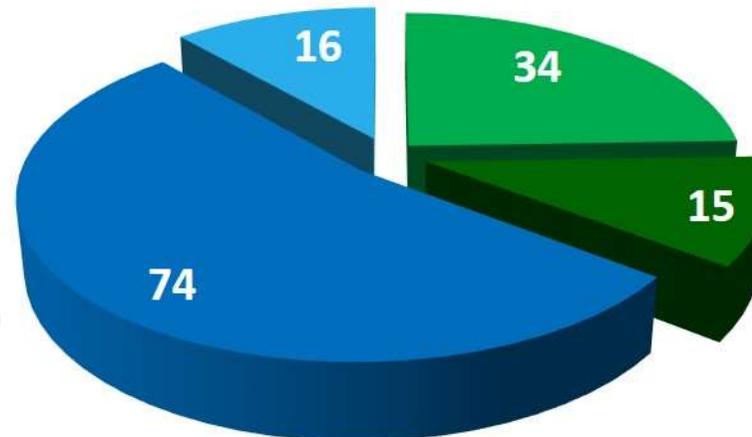
Meteorological Service Singapore (MSS) is the national meteorological authority for **weather** and **climate**

- i Weather Forecasting Services
- ii Multi-hazard Warning Services
- iii Climate Information and Prediction Services



MSS Staff Composition

- Meteorological Officers
- Research Scientists
- Technicians (including observers)
- IT/Admin



2. Physical Context



- 710.3 sq km
- Mostly urban landscape
- Most of Singapore is no higher than 15m AMSL
- Highest point is Bukit Timah Hill (165m)
- 2 main rivers – Singapore River and Kallang River

3. National requirements for observations

Priority Application areas

AVIATION Weather Services	PUBLIC Weather Services	MILITARY Weather Services
<p>Changi & Seletar Airports</p>  <p>Support ATM & AFTM</p> <p>Flight Information Region(FIR)</p> <p>Quality Management System</p> <p>Safety Management System</p>	 <p>Lightning risk alerts</p> <p>Special Events Weather Watch</p> <p>Dedicated weather watch-AGENCIES</p>	 <p>Navy</p> <p>Army</p> <p>Humanitarian Aid Mission</p>

Most relevant observed variables:

- Temperature, humidity, precipitation, wind, lightning
- Air quality
- Radiation, heat stress

Inventory of current national observing capabilities (maps and lists – 2 or 3 slides in total)

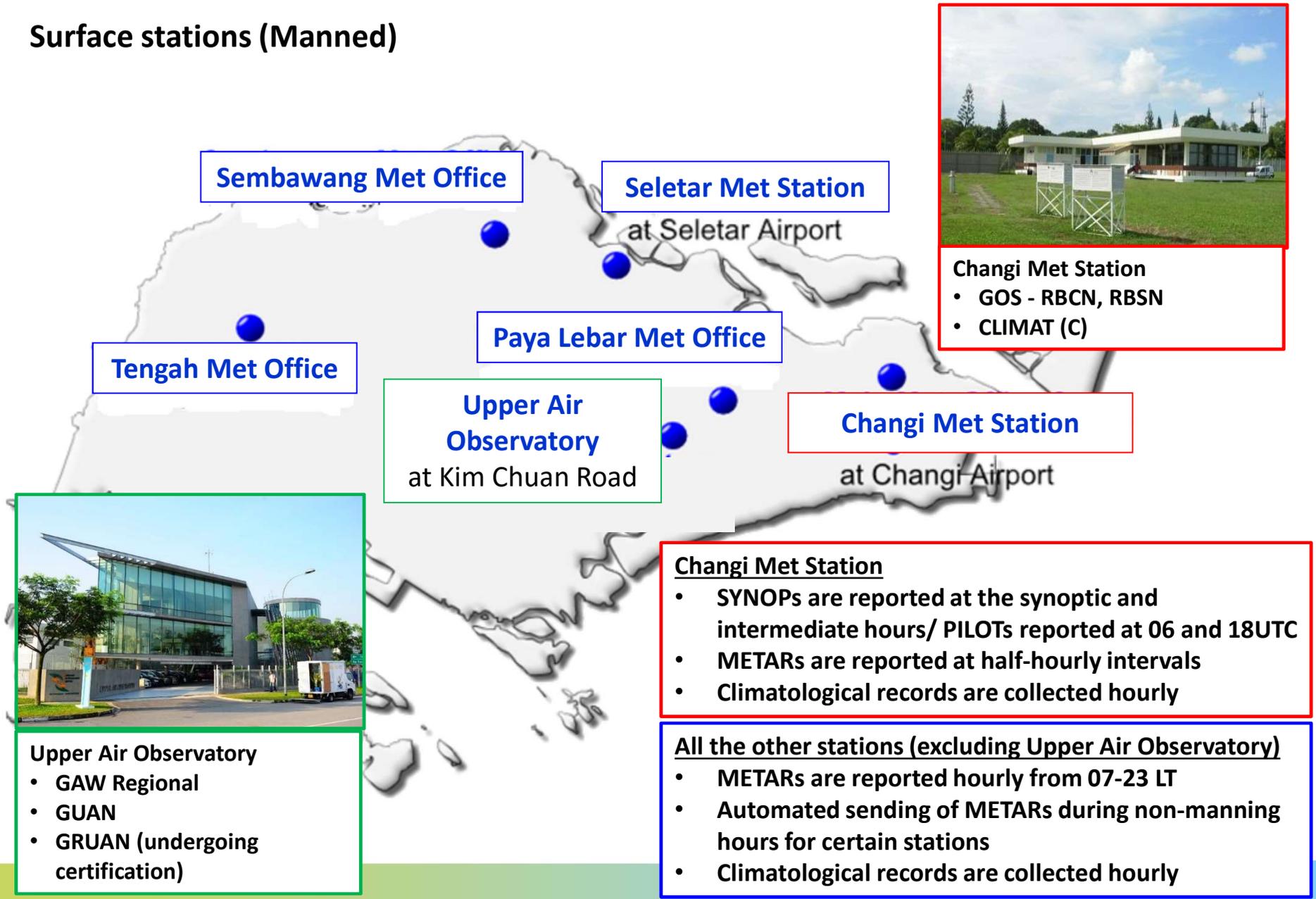
I. Networks description with metadata

- Map and list of meteorological/climatological operational stations (identifying the technology used):
 - Surface observing stations
 - Precipitation stations
 - Upper-air/radiosonde stations
 - Weather Radars
 - Lightning detection networks
- Map and list of other surface operational stations:
 - Hydrological stations
 - Sea stations
 - Atmospheric composition and other stations



4. Inventory of current national observing capabilities

Surface stations (Manned)



Sembawang Met Office

Seletar Met Station
at Seletar Airport

Paya Lebar Met Office

Tengah Met Office

Upper Air
Observatory
at Kim Chuan Road

Changi Met Station
at Changi Airport



- Changi Met Station**
- GOS - RBCN, RBSN
 - CLIMAT (C)



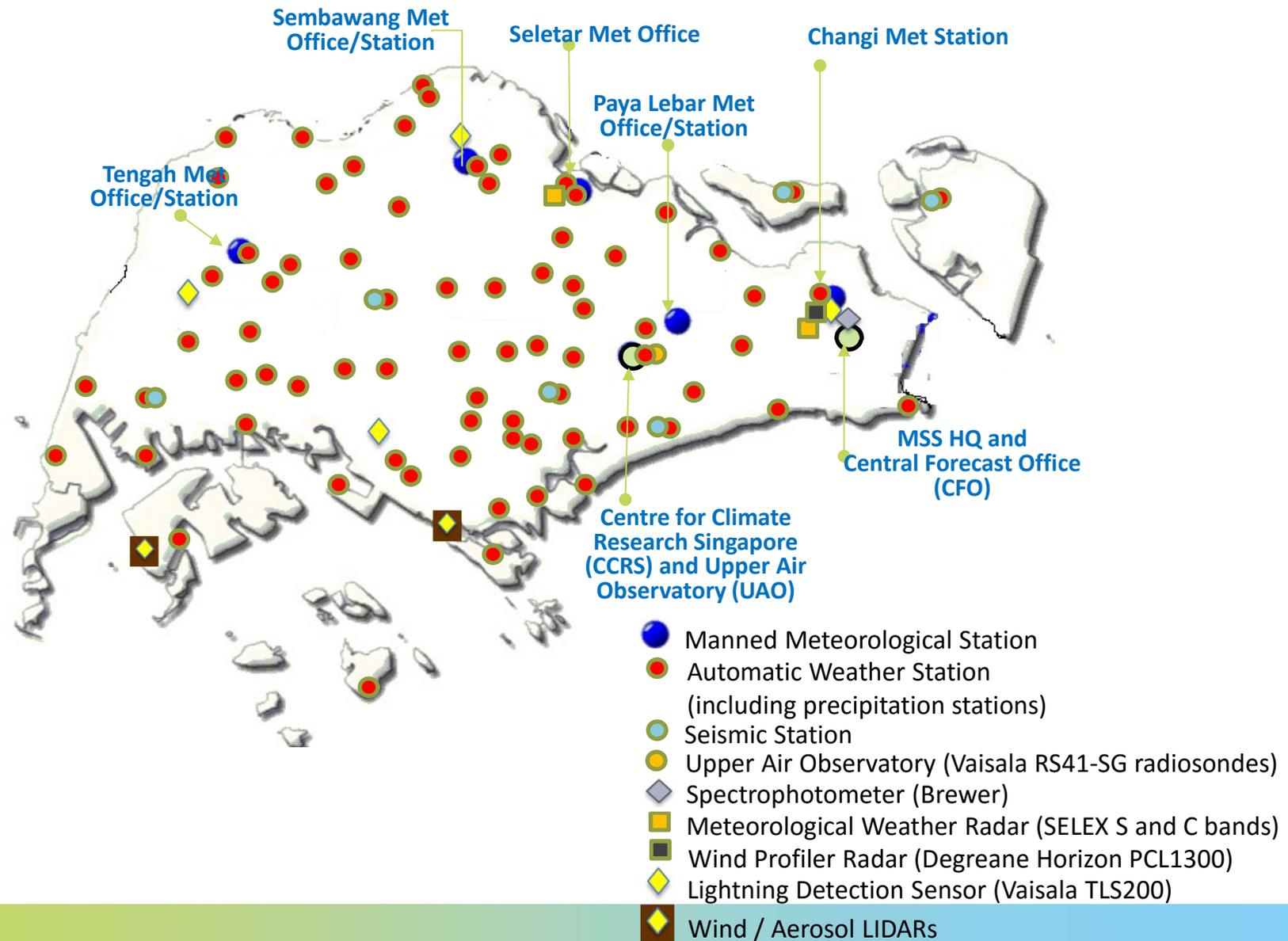
- Upper Air Observatory**
- GAW Regional
 - GUAN
 - GRUAN (undergoing certification)

- Changi Met Station**
- SYNOPs are reported at the synoptic and intermediate hours/ PILOTs reported at 06 and 18UTC
 - METARs are reported at half-hourly intervals
 - Climatological records are collected hourly

- All the other stations (excluding Upper Air Observatory)**
- METARs are reported hourly from 07-23 LT
 - Automated sending of METARs during non-manning hours for certain stations
 - Climatological records are collected hourly

4. Inventory of current national observing capabilities

Observation Network



5. Update on WIGOS IMPLEMENTATION

OSCAR/Surface

- Main climate station updated (Phase 1 requirements met)
- Upper air station pending confirmation of separation procedures and updating

Observation Committee

- Oversee and guide planning, implementation, management and maintenance of MSS obs network to intl requirements.
 - Analyse and review met obs requirements to meet ops and research needs.
 - Ensure the adequacy, reliability and resilience of the observation network through advising on requirements relating to inspection & calibration, obs best practices, the need for new/replacement sys etc
 - Identify emerging obs technologies, and develop recommendations
 - Coordinate with other agencies/providers engaged in met obs systems and data management activities.
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