The Bureau of Meteorology

CONECT and Collaboration

Dr Mick Pope

Outline

- An example of interagency collaboration - Mick
- WMO Structured Basic Satellite Skills Training Course – Paul
- Aviation training & others Kathy-Ann
- From the floor

An example of interagency collaboration

Background

- Unit 4 goals: Moving from general meteorological knowledge to job-specific skills in Unit 4
- Educational landscape: Post-pandemic shift to blended and online learning.
- Advanced Tropical Meteorology programme: Required review as graduates resumed in-person learning - Singapore (2023) | Samoa & Tonga (2024)
- Two components: classroom-based learning (~1 week), & location-specific forecast simulation (2-3 weeks)

An example of interagency collaboration

Approach, results, and benefits

1) **Review** graduate needs across three areas: Technical capabilities, job skills, procedural knowledge
2) **Collaborate** with local knowledge and NHMSs to create training material with an iterative scope/build/review process

Over the next 2 – 3 years:

3) **Build** a library of resources that will capture (and preserve) location specific forecasting knowledge
4) **Deliver** a flexible and customer-led modular training package (see appendix) outside of the current graduate diploma for NHMS capacity

- Examples: Refreshed simulation incorporates new duties and required skills (Singapore; 2023) and reflects the adoption of multiple roles by forecasters in smaller NHMSs. Customer Engagement practical (2023; updated in 2024 to consider needs of minority groups), new material to address procedural knowledge gaps (ARFORs/ROFORs, Common Alerting Protocol; 2024), updating of simulation to focus on location-specific hazards (Smoke haze; Singapore, Tropical cyclones; Samoa and Tonga)

An example of interagency collaboration

Lessons learned

- **Local knowledge and input are key**: 1) To capture local knowledge and practices 2) To advise on forecasting procedures and processes
- **The importance of diverse skillsets for forecasters, particularly in smaller NHMSs:** e.g.) hazard and risk management, taking on multiple forecasting roles, communicating with and understanding internal and external stakeholders, working independently and in a small team, cultural competence

Future work

- Increase collaboration with NHMSs and tertiary institutions to broaden content to serve more areas in the AsiaPac region.
- Position ATM as an on-demand standalone product that delivers and tailored region-specific tailored to capacity building requirements for meteorologists and other technical professionals.

An example of interagency collaboration

Roles

Area	Persons	Role
BMTC	Meteorology trainers	Conduct scoping of current material and identify educational gaps Create initial lesson plans Contact points for internal and external collaboration Project management
	SME and Design team	Design and build materials Ensure materials confirm to style guide and other standards Project management
Other Bureau teams	Senior forecasters, forecasting teams, communications teams etc	Provide support and subject-area expertise Provide business support, share existing resources Identify institutional forecasting knowledge to capture and preserve
Tertiary institutions		Collaborate on developing materials up-to-date with scientific advancements Provide specialist expertise (e.g., on meteorology research, hazard monitoring and assessment, risk management)
External NHMSs		Provide up-to-date information on forecasting knowledge and processes Provide local forecasting and cultural knowledge Identify institutional forecasting knowledge to capture and preserve Co-develop training materials with BMTC team Identify educational needs

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Advanced Tropical Meteorology training program – Singapore (2023)

The refresh of the ATM programme was piloted in 2023 with a minimum viable product produced for 5 days of training material and 2 weeks of location-based simulation delivered to both Australian and Singaporean graduates.

All material was delivered face-to-face as a proof-of-concept for a refreshed ATM programme developed in collaboration with local forecasting expertise and input from MSS.

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Advanced Tropical Meteorology training program – Singapore, Samoa and Tonga (2024)

- As part of the Bureau's support for the Pacific Weather Ready Programme, BMTC is developing a modular forecaster training programme that is

1) tailored to specific needs of Pacific Island customers while – concurrently –

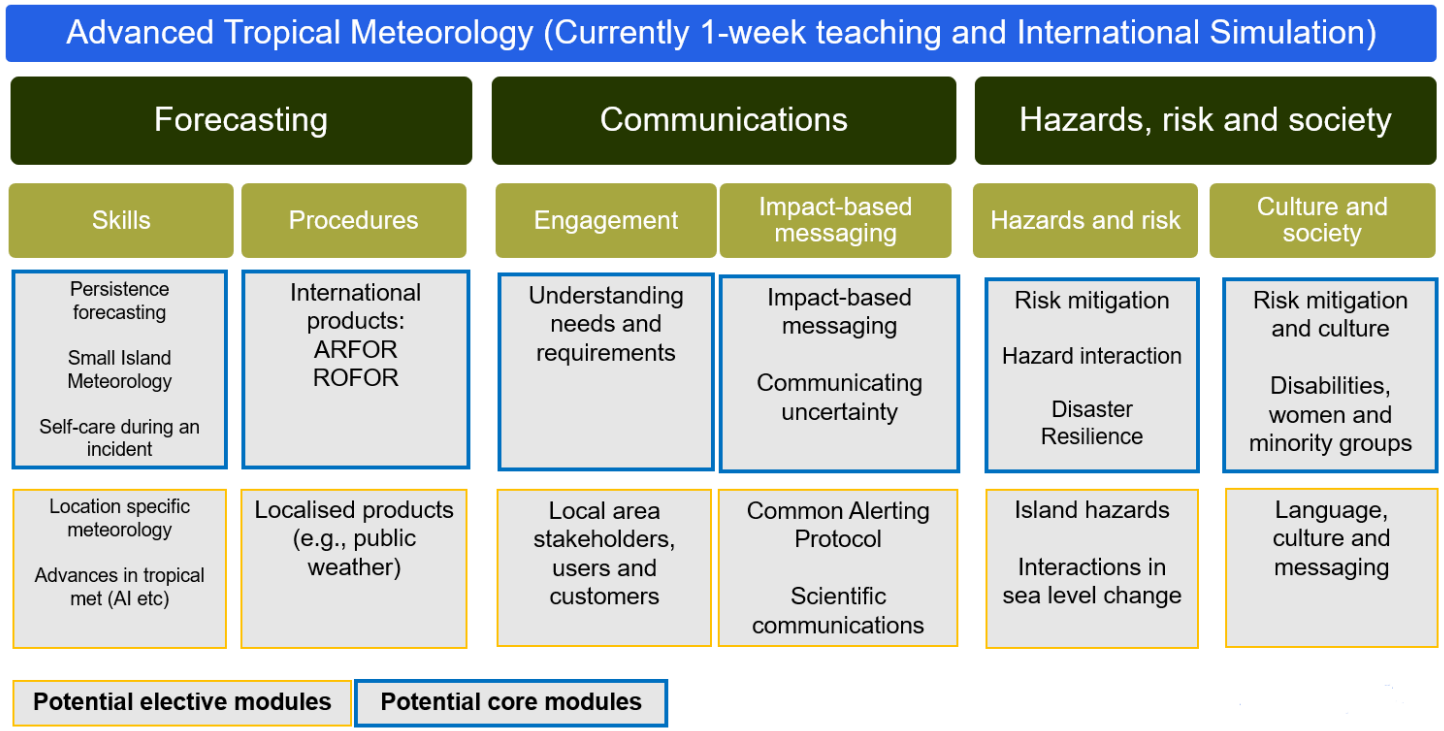
2) addressing skills gaps of forecasters and graduates within the Bureau.

- The training team in collaboration with a subject matter expert from Singapore have been working closely to produce a learning package which covers meteorology in the tropics with a specific focus on Singapore Meteorology for this iteration.

- The training program will consist of a series of "Core" and "Elective" modules and will be mapped against local requirements, units of competency, assessment criteria and qualifications required to be successful in the role.

An example of interagency collaboration

Proposed modules for the ATM package



An example of interagency collaboration

Phases of development

1. assess & understand what training material currently exists, when last used, relevance, what policies & regulations changes, how & who previously delivered, review learner feedback
2. project scoping, SME and LD flesh out how program – content, delivery method & duration. Acquire additional support from the business to assist in the development
3. Development and testing with 2024 cohort
4. Refine, build & deliver based on current program localised training programs for countries severely impacted by costal inundation, including tsunamis in a mixed-mode instruction format, using regional and local experts.

2024 Advanced Tropical Meteorology (Timetable Version 1, part 1)

Day	(start at 9am?) 10 – 11am	11.15 – 12.30am	Lunch	2-4.30pm (till 5pm?)
Monday 14th October	• ATM introduction session. • Introducing VLab resources	• Summary of key synoptic drivers of the weather over the Singapore and Tonga/Samoa regions. • Resource refamiliarization		• Graduates listen to a RFG recordings of interest. • They present a short summary.
Tuesday 15th October	9-11am Local climatology and tourist activity	11am-1pm Common Alerting Protocol	1-2pm Lunch	2-3.45pm Persistence Forecasting. 4-5pm Chart discussion and forecast table for Singapore
Wednesday 16th October	• Cloud identification using satellite and other data.	• Land vs oceanic vs island convection. • Parallax error. • Tools for thunderstorm monitoring.		• Working through real time or canned Thunderstorm case studies over Singapore, Samoa, Tonga.

2024 Advanced Tropical Meteorology (Timetable Version 1, part 2)

Day	(start at 9am?) 10 – 11am	11.15 – 12.30am	Lunch	2-4.30pm (till 5pm?)
Thursday 17th October	• Introduction to forecasting and monitoring heavy precipitation events.	• Singapore heavy rainfall forecasting procedures. • Interactive session.		• Heavy rainfall case study over the Singapore region (Java) • Heavy rainfall case study over the Samoa / Tonga region
Friday 18th October	• Introduction to forecasting and monitoring heavy sea and swell events.	• Smoke and Volcanic Ash detection and monitoring using remote sensing and ground observations.		• Sea and swell case study to work through. • Smoke and / or Volcanic Ash detection case study to work through. • Discussion at the end.

Collaboration between CONECT & other projects

- WMO Structured Basic Satellite Skills Training Course – Paul
- Aviation training & others Kathy-Ann
- From the floor
  - Bernie on Vlab: digital certificates; employee turnover - not only how to replace but also how to capture and continue what they were responsible for; AI = we have members that are starting to use AI to summarize and find information; how to better collaborate across discipline silos (also related to EOTEC DevNet)

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Thank you

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