Pacific Meteorological Council's PICI (Pacific Island Communication and Infrastructure) Panel meeting REPORT

13 and 15 May 2017, Tanoa Hotel, Nadi, Fiji Islands

Background

The Pacific Island Communications Infrastructure (PICI) Panel was established by the Pacific Meteorological Council (PMC) to serve in the capacity of an advisory and coordination committee to PMC on matters concerning the infrastructure, communications and dissemination of national and regional hydro-meteorological and tsunami (seismic and sea level) observations, forecasts, and warnings in the Pacific region.

It is one of five expert panels under the Pacific Meteorological Council (PMC). The PICI previously existed as the RANET (Radio and Internet for the Communication of Hydro-Meteorological and Climate Related Information), an ad-hoc working group on communications that was set up in 2003 at the Regional Meteorological Directors Meeting (RMSD) in Va'vau, Tonga.

The PICI Panel's role is to review gaps and challenges in promoting the importance of the timely delivery of warnings and alerts for the successful operations of Multi-Hazard Early Warning Systems (MHEWSs) and Multi-Hazard Information Systems (MHISs).

The PICI Panel may advise relevant agencies and entities, as required by PMC, at the national and regional level that are providers of national telecommunications systems, as well as regional and national telecommunications regulators, regarding improvement in the infrastructure supporting national meteorological services and others with multi-hazard early warning and prediction responsibilities A terms of reference (ToR) was developed for the PICI Panel and outline some of the key responsibilities. The panel with the support from the University Corporation for Atmospheric Research and the University of Hawaii have been utilizing online tools to meet and discuss the work of the panel.

A two-day meeting was convened in Nadi to allow the members of the panel and invited participants from the communications sector to provide their contributions and discuss the following;

- new and emerging priorities.
- how the NMHSs are strengthening their networks
- how the information collected is currently shared with outside organizations

- capability to operate during severe weather and sharing information within and externally

Objective of the Meeting

The specific objectives of the meeting include the following:

- Engagement of the key partners in the region to discuss issues relating to the timely communication and dissemination of meteorological observations, forecast, and warning information
- Explore options to improve coordination between national and regional communications providers, regulators, and regulatory frameworks, to ensure the availability and access to adequate infrastructure to meet the requirements for MHEWS and MHISs before, during, and after significant national hazard events, and in particular as they impact the dissemination of information to vulnerable communities;
- Discuss with national and regional telecommunications regulators, companies and providers attending the meeting the available opportunities and options to strengthen the engagement of NMHSs information dissemination as well as potential opportunities through relevant policies
- Update on the WMO Information System (WIS) and the WMO Integrated Global Observing System (WIGOS) Programme in the Pacific
- Review of the PICI ToR and the existing priorities and its Implementation Plan
- Contribution to the PIMS Review priorities relating to Communications and Infrastructure for Weather and Climate Services, tsunamis and hydrology
- Develop an implementation plan for the PICI Panel on key priority issues
- Discuss the PMC Agenda and the Second Pacific Ministerial Meeting in Meteorology (PMMM-2) and how the PICI Panel and its partners present their progress and recommendations

Outline of Activities

The meeting consisted of presentations, group and open discussions. They are detailed in the attached Agenda and are summarized below.

1. Opening

Dr Netatua Pelesikoti opened the meeting and acknowledge the participants and support from UCAR and partners. Ed Young provided a brief history of the panel and the need for it. Mr Wilson Leguvaka the vice chair along with Mr Mulipola Titimaea provided an overview of the meeting and the importance of creating linkages with ICT and telecom regulations.

2. Review of ToR

- Introduced by the chair, it was noted that the TOR under discussion was drafted before the PIMS was reviewed, and not all the new priorities are reflected in the ToR.

Recommendation

Chair took note and advised to shelf concerns for now and revisit once PIMS review is finalized and to be discussed online.

- Focus now is to report on the formation and activities of the PICI Panel to the PMC-4.

3. Update on WIS and WIGOS

- Dr Karl Monik presented the update on WIS and WIGOS
    - Questions were raised and addressed on the following:
        - Costs for instrumenting aircraft
        - Need for a sub-regional WIGOS center, there isn't one, this could be part of another project
        - Regional WIGOS center, how it operates and the associated costs
        - Aircraft sensors on smaller planes
        - Data Entry on OSCAR site and the nomination of focal points
        - Links to GTS in the islands and data access
        - Training components for OSCAR
        - Direct access via GTS and effectiveness of services
        - Plans are underway to have a WMO Region V WIGOS Workshop in Singapore in October 2017.
        - Ed took note that since WMO is planning a regional WIGOS meeting, and asked if there were plans to have the WMO Region V Working Group on Infrastructure meet at the same time, or in a separate meeting in the upcoming months, and encouraged the Panel and SPREP/WMO consider how the Panel can interact with the WMO RA V WG on Infrastructure, and support/participate in the October WIGOS Workshop.

Action Items

It was noted that under the review of the PIMS, there are relevant parts where WIS and WIGOS stand out across several different PKOs. The panel proposes if Karl review these actions/PKOs

To better understand the training required by Pacific Island Meteorological Services to support the development and implementation of Regional WIGOS and WIS plans for the Pacific Islands, it was agreed that panel members would discuss one on one with Karl during breaks ~~after~~ in the meeting, and that the Panel would focus on broader panel needs, and to discuss with Karl offline, and at future virtual meetings of the SPREP PICI Panel.

PICI Panel to have a representative at the October WIGOS meeting

4. Oral presentation on status of communications and infrastructure challenges in NMHSs

a. Tonga :

i. Infrastructure – operates 5 synoptic stations and 6 are at airports. All stations are still manually operated, a couple are at international airports where AWS are shared with the airports. There are plans to upgrade all stations through EU funding. Reports from the outer islands is through HF radio, information sent to them is by voice, as they have limited internet communications.
ii. The most pressing need is the training of technical staff in electronics to support operations and maintenance of observation networks and forecasting systems.
iii. Data servers ~~and~~ high internet usage due to ingesting global models, using about 20Gb of data per day and this is increasing.
iv. Plans are underway to establish a new office closer to the main town. Forecasting operations will be relocated there with the NDMO, and the new facility will also be a telecoms hub.
v. Sea-level monitoring stations are under the same AWS network. Request training support for technicians for sea level stations

b. Samoa :
i. Upgraded weather stations, using radio link communications, and the data are integrated ~~pushed~~ into several forecasting models and into GTS. Includes wind profiler that operates with Meteo Swiss and 2 AWS at the airport. All now linked to distribution software nodes and openly accessible to public through tools such as the Smart-Met, etc.
ii. For Tsunami – Early warning dissemination is through SMS. There have been problems with radio links, thus advice has been too use SMS but it costs too much. Overall telecom carriers have quite efficient fibre connection to the various ports. Backup/contingency is now under development, and will mirror everything to NDMO. Some difficulties with staffing. The ~~notes~~ JICA volunteer has been a great help

Discussions

- Seismic data and sea level data not shared through GTS due to high volume of data
- Data access via GTS
- ORSNET MOU on data sharing needs to be connected to a regional and high-level decision making body, as policy support is not aligned to a regional platform. From Samoa's view, the MOU was not endorsed at the regional level and needs to have that high-level decision to support data exchange
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Recommendations:

The panel recommends ORSNET to align with a regional organization and existing frameworks e.g. PIMS and SPREP through PMC PICI panel or others

Action Item:

PICI Panel to look into this.

ORSNET and Samoa to discuss offline and prepare a concept paper

c. Cook Islands:
    i. 7 AWS, 1 manual station with CTBTO station, with 3 silent. Will be installing 15 CLEWS stations. There are challenges with communicating information, link with NDMO is well established, and information and products have been upgraded. There have been backups of data but there is room for improvement. Use social media as a dissemination mechanism, especially to the northern islands

d. Solomon Islands :
    i. Challenges with 6 synoptic stations with a need for better services. Need for solutions that are more scalable and sustainable to get info from synoptic stations to main hub. Experiencing difficulties with the AFTN (Aeronautical Fixed Telecommunications Network).
    ii. Issues with receiving data via satellite.

Action item
It was recommended for the PICI panel meeting/ members to attend satellite meetings (NOAA, Asia-Pacific, etc.)

e. Vanuatu:
    i. Internet good at head office, and at most stations. Have multi-hazard challenges. Have 7 stations, 2 of which are AWS, and should get 3 more this year. Have a few tide gauges, seismic and volcanic monitoring systems. Challenges faced include ~~is~~ transitioning from manual to AWS, and need training for local staff, and the resources to maintain AWSs, and to convince government for more support

f. Fiji:
    i. Radars now have dedicated dual link data fiber, and have relocated several radars. Problems with Labasa radar, still using radio – looking at other options. Having ongoing discussions with Vodaphone and Digicel.
    iii. NDMO has upgraded VSAT communications, more reliable. FMS now looking to upgrade connection to VSAT.
    iv. Himawari satellite dedicated line to facilitate download of data, setting up backup, setting up a separate Himawari cast.
    v. A few VSATs using VHF, and will try to move them to something else. Local LAN has been upgraded to 1Gb with 10 Gb backbone, working on doing this in Labasa. Setting up backup system and, working to further mobile communications
    vi. Working with ISP providers for more bandwidth (from 20 mb to 50 mb or higher)

vii. One challenge – need to upgrade the frame relay GTS to Melbourne, which is currently at max. Have talked with BoM, but communications have stopped. Some BoM services (WIS) that go through the GTS, have been impacted by recent changes to IT Security at the BOM, and are now firewalled.

> Action Item:
> Regarding issue on WIS WIGOS - Karl will speak to BoM colleagues regarding communications and the BoM firewall, will try to re-establish secure links and upgrade from frame relay.

g. PNG :
   i. Longer records at manual stations.
   ii. Attempts to modernize have been mixed. Upgraded a couple of stations.
   iii. Have a private AWS network, airport network, and Met Service network. All need to be linked. Have been in discussion with UNDP, World Bank, and the EU.
   iv. Diagnostic found failures and system weaknesses almost everywhere, notes vulnerability of manual transmission. Have an HF radio network, but have low bandwidth at PNG NWS Headquarters. Trying to use SMS from the LAN, but are limited by lack of IT personnel. WIS server is good

h. Niue:
   i. EMWIN has been faulty in March 2016, but the system is now working.
   ii. Have only 1 surface observation reference station, and a climate station (rainfall).
   iii. Internet connection is through the government fibre network. Government restricts website access for Niue Met Service, which has no access to social media, and there are communications restriction for messages.
   iv. AWS was updated last year under the FINPAC Project. Had a few problems after installation – lightning related. Wind convertor was replaced, working for a while, lightning problem again. Resolved issue, working fine (modified lightning protection devices).
   v. Have a satellite phone for use in emergencies, but it is not registered.
   vi. NDMO provided handheld radios to use during emergencies to communicate with police. For overseas communications, there are issues with duplicated data on automatic and manual stations relayed via the Internet to Wellington.
   vii. Climate station is working. We will be installing new fencing to protect it.

i. Tuvalu :
   i. Has 4 synoptic stations, no AWS. All reporting is through HF and e-mail.

ii. As part of Phase of the UNDP funded NAPA II Project, we are installing HF radio and Chatty Beetles to all islands, which will address the challenges in communicating with islands when generator is down. Using voice and HF e-mail plus Chatty Beetle to communicate with the capitol.
iii. Moving communications to NDMO Coordination Center, which is also a portable HF Media Centre. Challenges with long term sustainability with the new systems, and will need support and training for technicians

j. RMI – reporting on behalf of the 3 north Pacific island nations.
   i. Summary of stations in all 3 countries. Palau moved from satellite to fiber. FSM – only Pohnpei is on fiber, the rest of FSM still uses satellite.
   ii. Rely on chatty beetles for remote islands, used for EWS and for collection of meteorological observations.
   iii. Limitation – many atolls that do not have coverage; building a network requires a lot of time and resources

Roundtable discussion

a) GCOS (Global Climate Observing) program that was supported by the US GCOS Program at NOAA, and used to help fund a GCOS officer at SPREP for a number of years. SPREP has been unable to identify the funding to replace–that role, but is working closely with WMO especially on how we can support this kind of work which would follow up on the FINPAC project and its support for sustaining and repairing meteorological and climate observations in NMHSs; continue the partnership work with Red Cross to raise hazard awareness and help get Met Service products and info to communities and insure that they are better utilized; support media and IT training for NMHSs;. Still have challenges of training only one staff member at a time, i.e. sharing experience and bringing up skills of all staff; need greater understanding to strengthen skills of operational staff;
b) UNDP RESPAC (Disaster Resilience for Pacific SIDS) Program Update– finalizing its work plan, 1 week or so to go. Not much discussion of PICI panel during board panel, panel not currently on the 2017 workplan, priorities from the panel could be taken forward next year
c) WMO Region V – upcoming WIGOS workshop noted by Karl in October in Singapore.

Action item – Countries to nominate national focal points for WIGOS

d) How active is the WIGOS Task Team?
e) Karl – with WEBEX calls and such they have had an increase in participation, opportunity to expand it over time, get more people involved
f) Ed – Has WMO made plans for the Working Group on Infrastructure to meet in 2017? If so, when is the WG-INFR scheduled to meet and where? What is the best way to follow-up after the workshop, when participants return home and nothing happens. How do we ensure follow up?

Recommendation:
PICI need to look at discussing who is responsible for following up trainings- not just deliver but ensure follow-ups

g) Wilson – regulated market and government services. Policies for providing these services, with Solomon Islands as an example – legislation is required so telecoms and mobile phone providers can help Met Services meet their communications requirements, assuring their role in technology and keeping up with the pace of change.

5. Coordination and the cluster approach

a. David Gibson – outcome from emergency cluster in Vanuatu, provision of free services during emergencies, use of social media like FB and pushing out warnings on FB – everyone is a forecaster now, pressure on local NMS to outperform everyone else
b. Mulipola – Met Service get occasional comments, such as – what is the use of training you guys, we already can look at satellite pictures.
c. Rossy – in Niue no clusters, use village councils. Well established in country, serve as point of access for NDMO, use a color-coded alert. Notes the importance of timely messages that reach the communities and the challenges to operate and maintain a 24 hr system.
d. Tuvalu – have issues of hacking – chatty beetle is also set to remotely turn on the sirens on outer islands
e. Fiji – in Fiji, NMS gives information to NDMO, NDMO makes decision. Challenges of communications between groups. Challenge was noted during Winston, review currently underway

Discussion

Recognition of disconnect from each other, and working in isolation, opportunities exist for further collaborations, e.g. regulators and Met Directors to work together. There are now opportunities occurring at the regional level, now we can look at having the same coordination at the national level.

SPREP: There is an opportunity for NMS to tap into cluster system, there is 1) a workshop in Vanuatu to work on national emergency plans, opportunities to address NMS needs; 2) conduct training sessions that NMS might benefit from, opportunities to partner on these trainings? Note we are bringing media to PMC-4; 3) use of information coming out from NMSs, challenges when other organizations are using outside sources of information.

Recommendation:
NDMO and NMHSs to look at defining TOR for communication
Recommend NMHS to start collaborating in the development of National Emergency Telecommunications Plans at the national level, and then report back to the regional panel and then go back to the ministers.

"Capacity Building Opportunities – Communications & Infrastructure" Presentation by Peni Sigabalavu and Goru Arvind from the University of the South Pacific (USP) ICT Department (Suva)

1) USP has 12 member countries and 25 large to small campuses across 33 million square kilometres in the Pacific Islands.
2) Supporting a widely dispersed network of campuses has its challenges, but successfully offers ICT Literacy & Understanding, ICT Technology Development, Evolving Teaching & Learning Landscape, Providing Equitable ICT Services, and Leverages Regional ICT.
3) Implementing a Bandwidth Strategy utilizing regional Ku and C-band satellite connectivity to all of its campuses, connecting to local ISP providers, and has 100 mbs fiber across the main USP campus.
4) ICT Services Infrastructure backbone that supports Learning Management System (Moodle), E-mail services, and Network Monitoring. Planned USPNet Upgrade in 2018
5) Capabilities include
    a. Human ICT Capacity Development
    b. PACE-SD
    c. Regional ICT Organization Membership, Advocacy and Participation
    d. Expansion of Regional Connectivity
    e. In-House Application Development
    f. Open Source Advocates
    g. Licensing Negotiations – Bandwidth, Applications
    h. Partnerships & Accreditations APNIC, ICAAN,..
    i. Support & Maintenance Process Advocate – ITIL
    j. Disability ICT Projects
    k. Live Monitoring Systems (NAGIOS, Data Centers)
    l. ICT Support Agreements
6) Plans for New Campus Building Projects
    a. Under Implementation:
    b. USP Republic of the Marshall Islands Project
    c. Imminent:
        i. USP Nauru Project
        ii. USP Cook Islands Campus Project
    d. In Planning:
        i. USP Tonga Project
        ii. USP Solomon Islands Campus Project
7) Key Lessons:
    a. Institutional Project Management.
    b. Stakeholder Collaboration is Key:

PICI Panel Discussion:

- USP ICT Department agreed to be part of the SPREP PICI Panel, and sees opportunities for further collaboration with national meteorological services.

Panel members acknowledged that the USP has a resilient ICT infrastructure supporting its campuses, and offer invaluable opportunities for working with Met Services training, continuing education, and backup communications

PIMS and PKO7

- The panel divided into groups to discuss the Key performance indicators for PKO 8 which was formerly PKO 7. Under the previous PKO7, communications was separate from observations, however, the updated reviewed PIMS (2017-2030) has combined the two into a new PKO. Discussions of the KPI will continue offline.

PICI Panel presentation to PMC

- The PICI panel discussed the upcoming PMC and PMMM meeting to be held and the presentations to be made by the panel. It was agreed that three papers will be presented, they are:
    - General Panel paper providing progress and update of the work the Panel has done
    - Regulators and Telecom Paper
    - RANET Paper

Evaluation:

- The PICI panel meeting was successful and collected important information and recommendation for the panel and individual members to follow up and to work on.

Follow-up Actions:

- Group facilitation team to send group reports to PIMS and PRCS consultants
- SPREP as the secretariat to finalize and circulate workshop report.

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