

Development and progress of the Oceania Regional Seismic Network (ORSNET) for Tsunami Early Warning

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Content

- **What is ORSNET?**
- **Why ORSNET?**
- **How ORSNET is Currently implemented?**
- **ORSNET Development updates**
- **ORSNET progressive results**
- **ORSNET Development Perspectives**

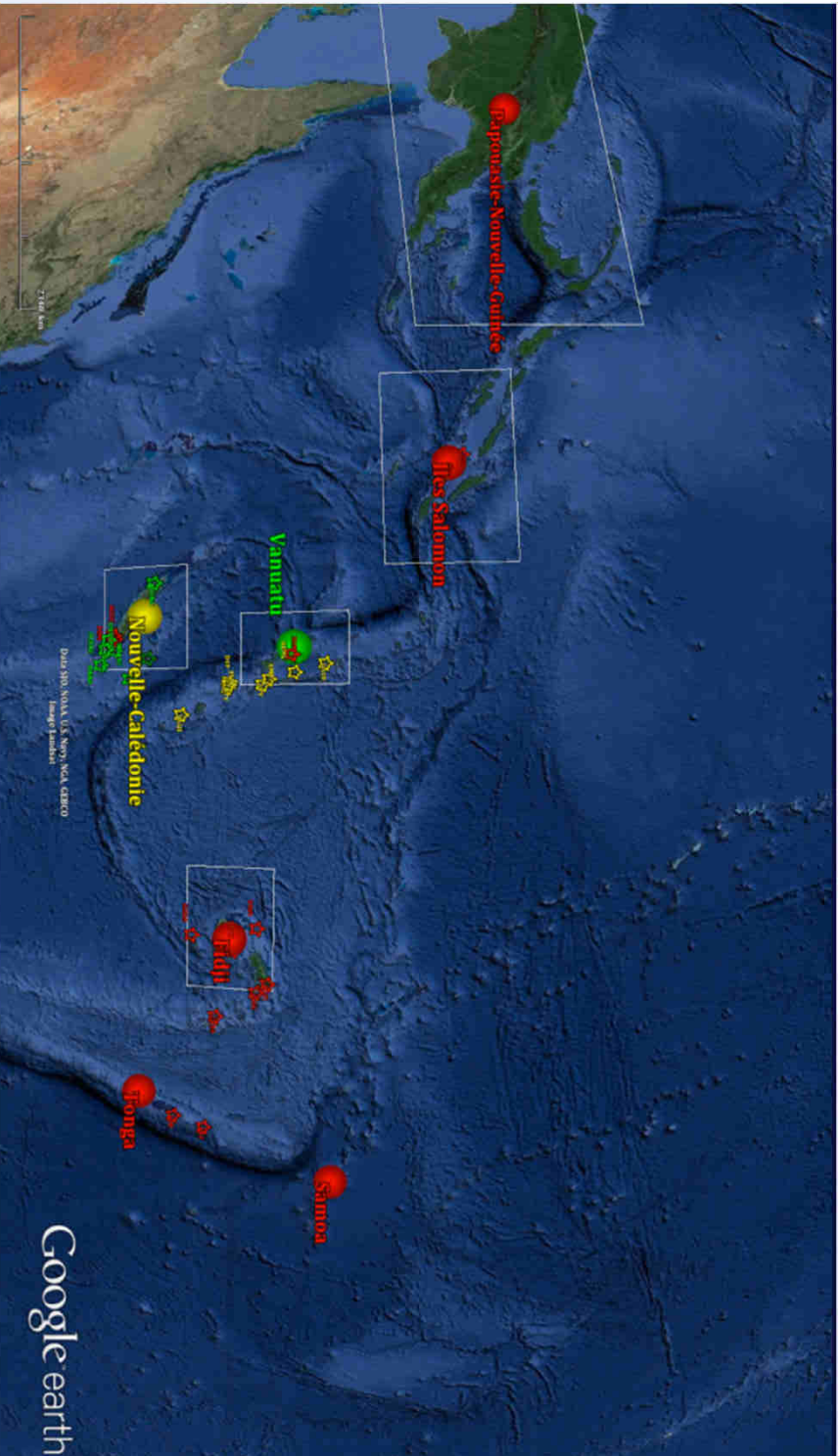




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What is ORSNET

➤ Oceania Regional Seismic NETWORK



Why ORSNET ?

- ***National seismic observatories need improve national Early Warning System for Earthquake and Tsunami hazards mitigation and research - 1990s***
- ***Regional Seismic Data sharing for a better network coverage for Tsunami Early warning – IOC/ICG /PTWC needs for PTWS – 2009, 2011, 2014***
- **ORSNET should support National Tsunami Warning Center to :**
 - ***Increase local Earthquake Detection and Analysis Capacity***
 - ***Improve Reaction Time to Tsunami Alerts***
 - ***Increase Technical Support for National Seismic Monitoring Network***
 - ***Ensure robust Seismic Data backup/archive***



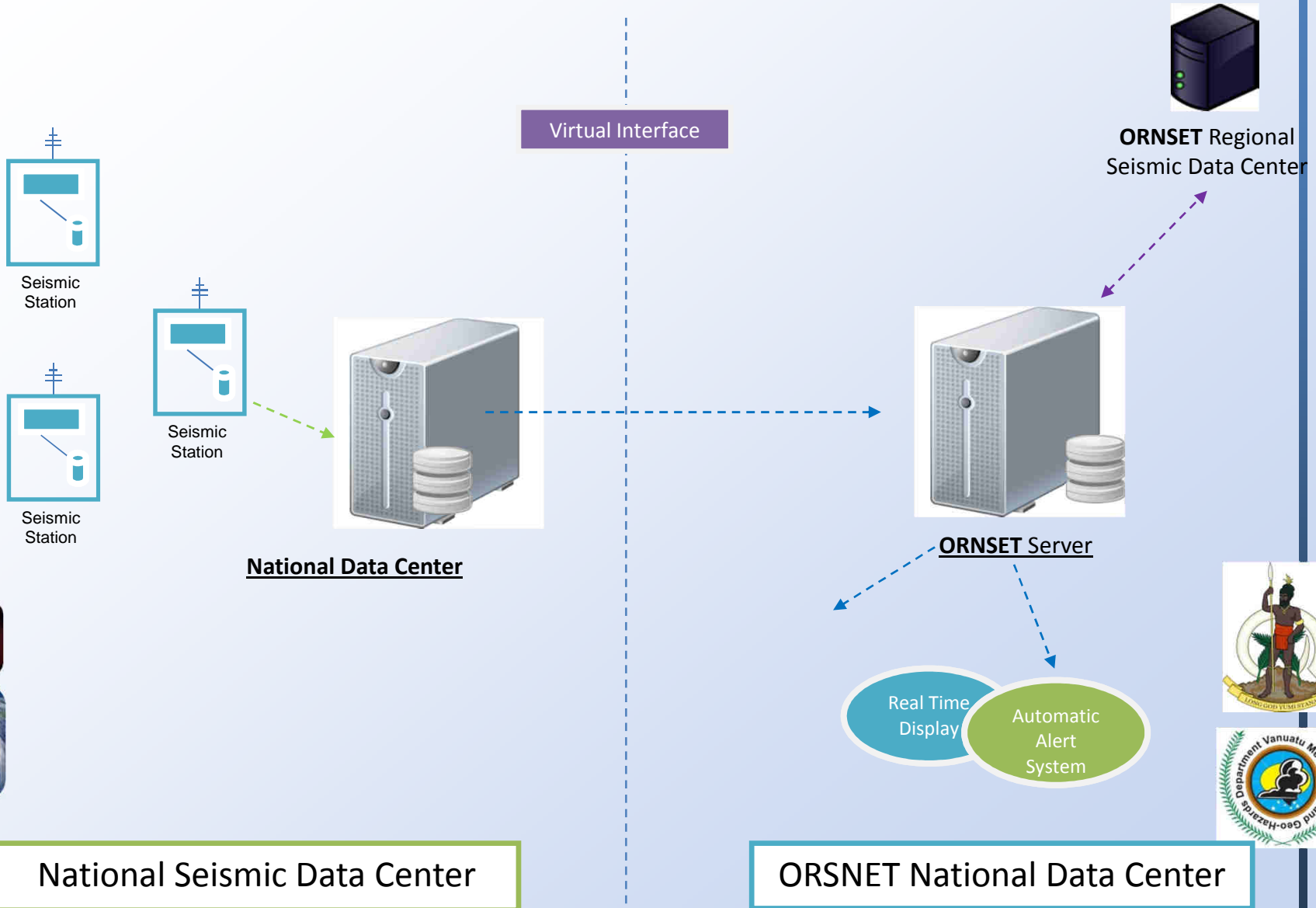
How ORSNET is currently implemented?

- 1) By all Pacific Island Countries members of the IOC/PTWS Seismic Data Sharing task team who agreed to share their Seismic Data into a Private Regional Network
- 2) By standardizing each National Data Center with identical and compatible Early Warning System (automatic detection and alert system)
- 3) By supporting a Regional Seismic Data Center to manage Regional Data Sharing
- 4) By having continuous commitment to jointly review evaluate and monitor the network development and making decisions on ways forward through annual ORSNET meetings





How ORSNET is currently implemented? ORSNET Members - National Data center





How ORSNET is currently implemented? Regional Seismic Data Center



ORSNET National Data Center
(Fiji, New Caledonia, PNG, Solomon Islands, Samoa,
Tonga, Vanuatu)



ORSNET Regional Seismic Data Center
Virtual Private
Regional Network
Hosted in IRD
Noumea, NC



ORSNET Regional Archive & Regional Database
Very Large storage for seismic wave's data
Seismic Regional Events Database



ORSNET development updates

ORSNET Regional Server:

- Funded and Supported by French government through Pacific Funds in 2013, 2014 and 2015
- Installed and supported by ICT Technical Team at IRD Noumea
- Fully functional since 2013, 99% of running time, 1% defect

ORSNET National Data Center:

- Funded and Supported by French government through Pacific Funds in 2013, 2014 and 2015
- Vanuatu and New Caledonia Network connected in 2012-13
- Solomon Islands Seismological station and Western Samoa Seismological Network connected in 2014
- Fiji and Tonga Seismological Network connected in 2015
- PNG to be connected in 2016



ORSNET Development Updates

➤ ORSNET National Seismological Network:

➤ **TONGA:**

- 4 stations
- Existing National Data Center
- Connected to the Regional Data Center

➤ **WESTERN SAMOA:**

- 6 stations
- Existing National Data Center
- Connected to the Regional Data Center

➤ **FIJI:**

- 7 stations
- Existing National Data Center
- Connected to the Regional Data Center

➤ **SOLOMON ISLANDS:**

- 2 stations, 12 more planned for 2016
- National Data Center to be upgraded
- connection to the Regional Data Center to be improved



ORSNET Development Updates

➤ ***New CALEDONIA:***

- 9 stations
- Existing National Data Center
- Connected to the Regional Data Center
- Host of the ORSNET Regional Data Center

➤ ***VANUATU:***

- 12 stations, 7 more planned for 2016
- Existing National Data Center
- Connected to the Regional Data Center

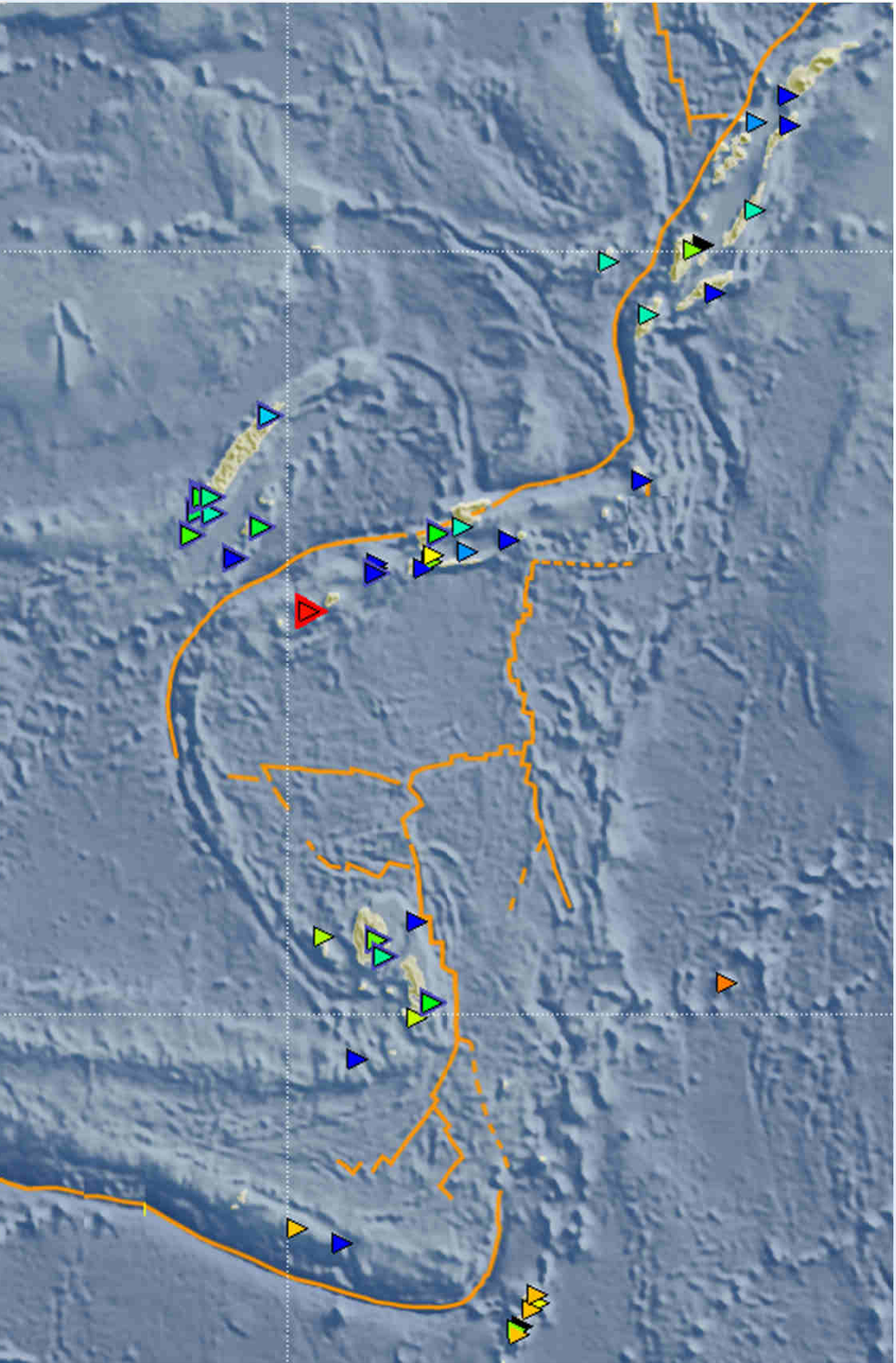
➤ ***PNG:***

- 9 stations possibility to include volcano monitoring stations
- Existing National Data Center
- Not Connected to the Regional Data Center, planned in 2016





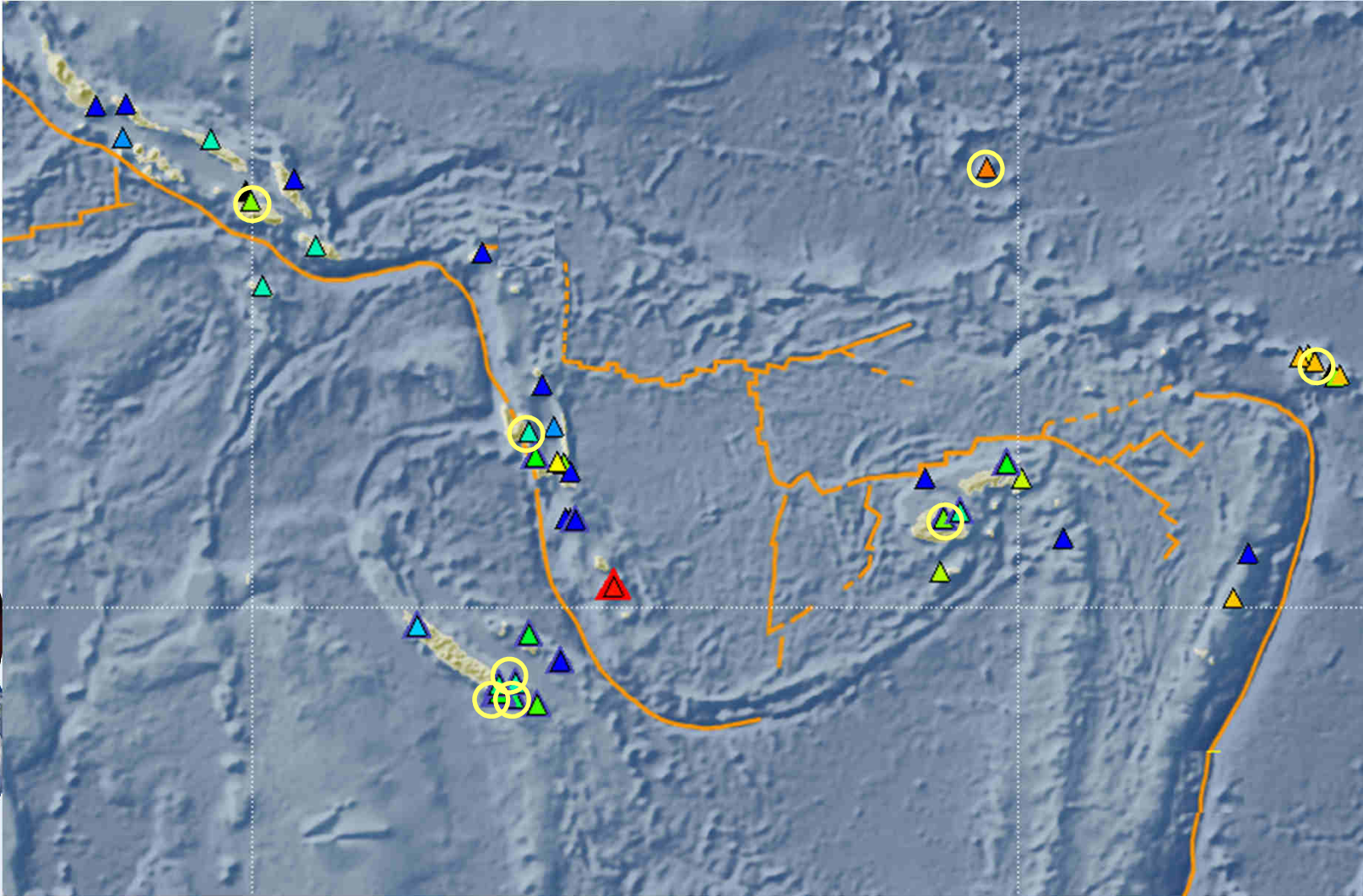
ORSNET NOW



➤ 68 Stations to be connected by 2016



Stations shared with International Seismic stations



ORSNET progressive results

1) Increased coverage of Earthquake Monitoring Stations in the region:

- From < 10 stations to 68 stations

2) Decreased time between earthquake detection time for location and effective tsunami alert:

- From > 10 min to < 2 min

3) Shared resources between South West Pacific Countries:

- < 10 staffs per country -> Regional Expert Team
- Common Early Warning System Framework

4) Increased National capacities on Early Warning System :

- ORSNET does not replace PTWC alert system or USGS web service





ORSNET progressive results

- 5) Improved EWS for National Seismological Observatories
- 6) Technical Support provided to countries in need e.g. Solomon Islands Seismological Monitoring Network
- 7) Technical Support for the setting up of the Fiji Seismological SMS EQs Alert System
- 8) National Data Center and Data analysis training provided
- 9) Increased capacity for national data Archiving System through Regional Data Center
- 10) Improved data ownership



ORSNET Next Steps

ORSNET Development Perspective:

- Connect the other countries as agreed by ORSNET members
- Strengthen Regional Seismological Observatories Partnerships
- Need support from international Institutes for Training, Workshop, Network Maintenance, Standardization Processes, Procurement, National funding support mechanisms for ORSNET operations...
- Increase Technical Capacities of National Seismological Observatories for complete Earthquake EWS
 - **Evolution of the current EEW system based on Seiscomp3**
 - **Regional Warning Dissemination system**
 - **Automatic Focal Mechanism**
 - **Intensity and Shake maps**
 - **Increase of ICT and engineering local capacities**





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