

1-5 July 2013
Nadi
Fiji Islands

Agenda Item 12.4 : Pacific-Australia Climate Change Science and Adaptation Planning (PACCSAP) Science Program

Purpose

1. Pacific-Australia Climate Change Science and Adaptation Planning (PACCSAP) Science Program impacts, update and future planning

Background

2. The PACCSAP Program, including the science component, is scheduled for completion in June, 2013. A limited, twelve month 'no-cost' extension of PACCSAP to June 2014 has now been agreed by AusAID to allow for the completion of specific project milestones by DIICSRTE¹, the Bureau of Meteorology and CSIRO, which for various reasons are expected to be outstanding as at June 30 2013.

3. An internal (CSIRO/Bureau of Meteorology) evaluation of the Pacific Climate Change Science Program (PCCSP) and PACCSAP Science Program was conducted in 2012/13, to determine what impact the program outputs have achieved with target next and end users (including Pacific NMSs and other key stakeholders) over the four year period to 2012/13. The evaluation also identified learnings and challenges, as well as gaps and needs for future research. A summary of interim findings from this evaluation was presented at the PACCSAP Science Symposium in Honiara, 13-15 March, 2013 (Annex 1).

4. It is widely acknowledged from this evaluation that the Program has successfully achieved its broad objectives and has achieved measurable impacts in the Pacific, particularly in relation to enhancing scientific understanding of climate processes, variability and change, as well as the development and application of new tools and associated capacity in Pacific island country partners.

5. In relation to the Pacific Islands Meteorological Strategy (2012-2021), delivery of the PACCSAP Science Program through collaboration with the national meteorological services (NMS) in partner countries has contributed in a tangible way to the implementation of Pacific Key Outcomes (PKOs) and associated Pacific Regional Priority Actions during the period 2011/12-2012/13 (see summary Annex 2).

Update

6. Planning for the next phase of PACCSAP (post June 30 "13) is underway, on the basis that AusAID has agreed in principle to fund a 12 month (2013/14) extension of the existing regional program, including the science component, to undertake new work pending outcomes of the existing review of the International Climate Change Adaptation Initiative (ICCAI). The ICCAI review is expected to inform the new AusAID Pacific Development Agenda (2013/14-2015/16).

7. In practice, the science component of both the 'costed' and 'no-cost' extensions of PACCSAP will be delivered concurrently by CSIRO and the Bureau as a single, integrated, regional portfolio of work, in

¹ the Australian Department of Industry, Innovation, Climate Change, Science, Research and Tertiary Education (formerly DCCEE/Department of Climate Change and Energy Efficiency)

partnership with DIICSRTE and key Pacific stakeholders, albeit with a somewhat reduced scope and scale compared to PACCSAP due to resource constraints. The strategic aims of the extension of the PACCSAP science component in 2013/14 remain largely unchanged from 2011/12-12/13, including:

- science to inform decision-making for adaptation planning and sustainable development in the Pacific, with
- regional focus on Pacific national meteorological services (NMS) and regional organisations and universities as key stakeholders,

8. The specific priorities and program design for the extension of the PACCSAP science component in 2013/14 are subject to confirmation by AusAID and require input from key stakeholders to ensure effective and efficient delivery of relevant science-based outputs and realisation of agreed outcomes for target next/end users in the Pacific.

9. Interim findings of the internal science program evaluation in 2012 (Annex 1) also identified the emerging national needs of sectoral and local community stakeholders for science-based evidence to support decision-making for adaptation planning. Further consideration of these needs will be addressed following the completion of the ICCAI review and release of the new AusAID Pacific Development Agenda (2013/14-2015/16).

10. A forum of Pacific NMS directors and delegates was convened at the PACCSAP Science Symposium in Honiara as part of the final day, post-PACCSAP planning session. This forum reviewed key issues addressed or arising during the symposium, from the perspective of the NMSs, including remaining climate information gaps and emerging needs in the Pacific. A synthesis of key points raised during the forum is provided in Annex 3.

11. The longer-term role of NMSs and by association, regional organisations, universities and other key Pacific stakeholders needs to be determined as part of the PACCSAP Science Program extension, particularly in relation to: 1) the sustainable development of scientific capacity, 2) the management of scientific knowledge, and 3) the communication/extension and ultimate use of this knowledge within sectors at national and sub-national (to community level) scale within western tropical Pacific island countries and territories. The pivotal role of NMSs supported by collaborative partners in Australia and the Pacific as climate data 'champions' and climate knowledge 'brokers' is critical to realisation of sustainable, longer-term adaptation and development outcomes from the ODA-funded investment in Pacific climate science over the last several years.

Recommendations

12. The Meeting is invited to:

Consider broad priorities for the extension of the PACCSAP Science Program **and advise feedback** to inform **development of program design** and priorities, including the specific roles of NMSs and by association CSIRO and the Bureau, regional organisations, universities and other relevant Pacific regional and national stakeholders.

Attachments

- Annex 1: Summary of interim results from the PCCSP/PACCSAP Science Program internal evaluation in 2012
- Annex 2: Contributions by PACCSAP Science Program to implementation of Pacific Regional Priority Actions of Pacific Islands Meteorological Strategy 2012-21
- Annex 3: Synthesis of key points raised during NMS Director's Forum, Honiara Climate Science Symposium, 13-15 March "13

Annex 1: Summary of interim results from the 2012 PCCSP/PACCSAP Science Program internal evaluation (PACCSAP Climate Science Symposium, Honiara, 13-15 March “13)

Preliminary Key Findings: Relevance & impact

➤ Regional

- world-class, peer-reviewed science knowledge, tools & capacity/capability → widely acknowledged, new benchmark
- new science networks (nb. relationships!!!) & awareness

➤ National/sub-national

- informing international negotiations and national CC policy & communications
- new science, incl. data, infrastructure & capacity
- increased (multi) sectoral & community awareness (but more work to do!!)



Preliminary Key Findings: Effectiveness & Efficiency

- Scope/scale mostly appropriate, although not all work recognised
- In-country activities favoured, although Australian activities valued
 - Tools, training & in-country support highly valued
- Ready access/support acknowledged & valued
 - Collaborative/consultative approach mostly acknowledged & valued
- Timeliness, flexibility and resources mostly adequate & well targeted
 - Web-based delivery great when works nb. limitations!!
- No complaints, only constructive feedback!!
 - Room for improvement, gaps & needs

Evaluation findings: key drivers, gaps & needs

- **Regional**
 - ❖ mainstreaming (integration) of CC science and adaptation into the Pacific development agenda → enhancing CC resilience
 - ❖ science-based evidence to inform policy & planning → decision frameworks/pathways???
 - ❖ integration of science and adaptation planning (end-end)
 - ❖ ongoing science capacity building & communications support
- **National/sub-national**
 - ❖ ongoing fundamental science (processes, trends, projections)
 - ❑ more As/more Qs!!
 - ❑ increasing emphasis on variability & extremes
 - ❖ new & emerging (multi) sectoral needs (geo-politically explicit)
 - ❑ emphasis on near-term, spatially down-scaled
 - ❑ social/cultural, economic, environmental considerations

Evaluation findings: challenges & lessons learnt

- At the start of a long journey – manage expectations & timelines!
- Require clearer line of sight b/w outputs and outcomes
- Outcome hierarchy (strategic & temporal) makes sense
- Managing stakeholder/personal relationships critical
- In-country contact is a critical (but resource intensive) feature of service delivery
- Multi-disciplinary approach is required – ↑ next/end user demands (cross-cutting)
- Every country's needs are similar but different!!??
- Sustainability of capacity & capability major issue for all
- Communications need to be managed at both strategic & operational levels

Annex 2: Contributions by PACCSAP Science Program to implementation of Pacific Key Outcomes/Regional Priority Actions for Pacific Islands Meteorological Strategy 2012-21

Key Outcome	PACCSAP science contributions to implementation of <i>Regional Priority Actions</i>
<p>PKO 4: Multi-Hazard Early Warning Systems for tropical cyclones, storm surges, waves and tsunami in the PICTs' region are implemented and improved</p>	<ul style="list-style-type: none"> ○ Development of tropical cyclone seasonal forecast and longer term projection capabilities and tools, including four POAMA-based seasonal predictions tools (temperature and rainfall, SST, SLR and tropical cyclones), updated CMIP5 global climate model regional and national projections and downscaled simulations, Pacific Tropical Cyclone Data Portal, Tropical Cyclone Risk Model and downscaled simulations ○ Development of wave hindcast dataset, projected wave climate database and ensemble of wave projections ○ Analysis of historical extreme sea level events and assessment of projections of extreme sea level events for Fiji and Samoa and wave transformations for extreme sea level events in Tuvalu
<p>PKO 6: Climate information and prediction services, including drought prediction, in the PICTs' region are improved</p>	<ul style="list-style-type: none"> ○ Development of climate science tools, including Pacific Climate Futures, CliDE climate data management system and Pacific climate data portals, and delivery of training and technical support for application of such tools to NMSs and Pacific island country (PIC) stakeholders ○ Provision of new information to enhance understanding of large-scale climate drivers and processes affecting climate variability and change in the Pacific, including ENSO, SPCZ, ITCZ and Western Pacific monsoon, targeted at NMSs and PIC stakeholders in regional organisations and universities ○ Provision of updated (CMIP5-based) global climate model projections of selected climate parameters for western tropical Pacific partner countries, including applications to assess vulnerability to/risks of natural hazards such as drought, flooding, tropical cyclones etc. ○ Provision of new information and seasonal prediction tools (data portals and dynamical models) for selected climate extreme parameters, including SLR, temperature, tropical cyclones and rainfall, to facilitate drought, flooding and storm-related disaster risk management in response to climate variability and change ○ Provision of new information to enhance understanding of ocean acidification and coral bleaching systems and processes and associated risks, including preliminary development of seasonal/extreme SST and coral bleaching risk portal ○ Development of regional science communication and capacity building products and support, including supplementary country report and synthesis report in collaboration with NMSs, regional science training and support activities for NMSs and regional media, science forums and mentoring and attachments involving NMSs, as well as customised communication products for broader (NMS stakeholder) audiences, including non-technical synthesis report, animations and training materials.

PKO 8:
 PICTs' historical climatological data are preserved

- Development of CliDE climate data management system and Pacific climate data portals, and delivery of training and technical support for development and application of such tools and for rescue, digitisation, QA/QC, homogenisation and reporting of historical Pacific climate data records in collaboration with NMSs
- CliDE and data digitisation program undertaken through respective NMSs in eight PICs where relevant MOUs/agreements are in place, including Cook Islands (CK), Kiribati (KI), Niue (NU), PNG (PG), Solomon Islands (SB), Tonga (TO), Vanuatu (VU) and Samoa (WS), as well as through the Ministry of Communications and Transport in East Timor (TL). CliDE infrastructure has been installed and commissioned, complete with in-country training, in all nine countries. Subsequent digitisation activities using CliDE, designed to secure historical hard copy data located in-country were undertaken in all nine countries. A summary of digitisation activities (number of daily records key-entered during PACCSAP) for all nine countries effective as at May '13 (except PNG which is effective as at Jan. '13) is as follows:

Type	Country	Stations	Work Estimate	Work Done	% Done
daily	CK	6	27466	7574	28
daily	KI	5	57518	19898	35
daily	NU	7	19710	4982	25
daily	PG	158	400040	287454	72
daily	SB	7	39777	31503	79
daily	TL	15	342370	82711	24
daily	TO	6	30052	9720	32
daily	VU	8	25915	25915	100
daily	WS	64	294555	389961	132

- For most countries the digitising has focussed on the key parameters of daily max. and min. air temperature and rainfall. Priority for future digitisation is on mean sea level air pressure, and wind speed and direction. The PACCSAP data digitisation activities have now been completed, although limited technical support for development and maintenance of CliDE is expected to be provided as part of the 2013/14 extension of PACCSAP. As a result of the installation and commissioning of CliDE infrastructure and associated training, all participating countries now have the capacity to continue the digitisation program following completion of PACCSAP and subject to alternative funding availability.

<p>PKO 10: Regional and NMSs are more capable and effective</p>	<ul style="list-style-type: none"> ○ Delivery of regional science forums including (but not limited to) Climate Extremes Workshop in Noumea, Science Symposium and Technical Training Workshop in Honiara, delivery of PAdClim and Climate Science Winter Schools in Melbourne, science mentoring and attachments in Melbourne and PICTs, science training and education events at USP in Suva, tools training in support for Pacific Climate Futures and ClIDE throughout the Pacific etc, joint authorship of science publications and conference presentations and posters and support for attendance at ISCHMO 10 in Noumea and Climate Services Forum in Suva, all of which have involved high level participation and in many cases collaboration with NMSs.
<p>PKO 11: Education, training and capacity development activities in the fields of meteorology and climatology are coordinated and improved</p>	<ul style="list-style-type: none"> ○ See PKO 10 - Ditto
<p>PKO 13: Enhanced strategic partnerships and collaboration with UN, regional and national organisations and agencies</p>	<ul style="list-style-type: none"> ○ Implementation of Honiara Climate Science Symposium and Technical Training Workshop involving SPREP and NMSs, and participation in/support for NMS involvement in Climate Services Forum in Suva

Annex 3: Synthesis of key points raised during NMS Director's Forum, PACCSAP Climate Science Symposium, Honiara, 13-15 March "13

Stakeholder reflections: panel discussion preamble

- Panel consisted of NMS Directors/representatives from:
 - Cook Islands, Vanuatu, Tonga, Solomon Islands, Samoa, Fiji, Kiribati, PNG, Niue & Marshall Islands
- Key points from the panel discussion are summarised here, and are relevant across partner PICs unless otherwise stated
- In consideration of key points/comments raised in the discussion, it can be reasonably agreed that:
 - PICs (thru NMS & other sectoral stakeholders) highly value PCCSP/PACCSAP science products and services; only science program in Pacific providing 'real benefits' to partner countries; nothing prior!
 - PIC NMS are very concerned over a possible lack of science support after June... "journey only just commenced", and
 - there is consensus support from PIC NMS & representative PIC government sectors at the symposium for the science program to continue on a broad front

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Stakeholder reflections: panel discussion key points raised

- CliDE very helpful; filled a void & needs further support; digitised data needs to be analysed; data ownership and ready access by PICs is a key issue
- Many 'science questions' remain in relation to better understanding climate drivers and associated projections
- Research on better understanding SPCZ impact on climate is important as PIC communities deal with effects on daily basis!
- Research focus needs to be both regional and national/sub-national scale
- Collaboration between Australian & NZ scientists and NMS is very important to PICs – NMS capacity is very limited!
- Need to address uncertainty in regional projections & make relevant to sectors
- Need to integrate science into university curriculum & tap into research capability
- Need to integrate science with traditional knowledge, including translating science into language/knowledge useful for local stakeholders

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Stakeholder reflections: panel discussion key points raised

- NMS staff need formal science training (role for USP?) & also continue with mentoring & attachments via CSIRO/BOM
- Concept of Pacific regional centre for climate research proposed
 - facilitate in-country science capability & research
 - forum for collaboration between USP and PIC stakeholders
- Need to better integrate climate change adaptation and disaster risk reduction in the Pacific:
 - to be supported by climate research as well as social and economic research
- Decline in observational network including monitoring stations & instruments is major concern in many countries, including Tonga and PNG
- Sea level rise needs to be incorporated as a key variable into Pacific Climate Futures, particularly for countries such as Solomon Islands which has major problem managing impacts of sea level rise and coastal flooding
- Who is going to maintain data portals, & how will this be done to ensure NMS role is delivered effectively?

Stakeholder reflections: panel discussion key points raised

- Further development of dynamic models such as POAMA required to improve seasonal predictions
- Science-based evidence to inform vulnerability and risk assessments which in turn facilitate adaptation planning and investment priorities
- The science must be based on high quality data, but there is a risk that ongoing data sources will be constrained by underinvestment in (and maintenance of) the observational monitoring network
- Key challenge within PICs is to ensure climate adaptation and the role of science to inform decision-making is appropriately prioritised within government, noting competing issues such as health, education, security, infrastructure etc
- How to get science outputs into national planning and policy development is a key need and a challenge
- Long-term research mentoring and in-country attachments are effective in building science capacity in key PIC stakeholders and are valued activities
- Local language version of science communication products very helpful
- Recurrent funding support for science is preferred compared with short/fixed term