



Aim: The aim of the USP EU-GCCA Project Sub-Regional Trainings is to equip community members with the knowledge and skills to develop community based climate change adaptation strategies.

Objective:

- Prepare a cadre of trainers equipped with knowledge and the ability to support and guide local communities, governments, NGOs, civil societies and regional organizations: their efforts to adapt to climate change, and to train others in their respective countries in adaptation, especially at the community level.
- Improve communities' awareness and understanding of climate change and of the appropriate ways to adapt to its effects, in their specific local environments in order to become more resilient to climate change.

Learning Outcome: Participants will become familiar with and gain enhanced understanding of effective facilitation and training skills to help implement capacity building programs in their country.

Training Day	Agenda	Facilitator/Presenter	Notes
1 (15 Apr 2013) Climate Change Overview	Opening	-Chief guest: Minister Umiich Sengebau, (Ministry of Natural Resources, Environment & Tourism)	<p>-Registration of participants (Ms. Ines Kintoki/Ms. Randa Jonathan) Prayer, National Anthem and Palauan Traditional dancing by Ngerr Dancers.</p> <p>-Mr. Wayne Andrews welcomed and introduced the Guest of Honor Governors, Delegates and Senators, Prof. Holland and other participants.</p> <p>-Keynote address by Minister Umii Sengebau. Palau doesn't have a Climate Change Policy, however, there are a network of MPAs which addresses the CC issue to a great extent. As a result of CC, Palau will have more rain. The communities/stakeholders in Palau need to address the Climate Change impacts in Palau; hence, this training is being carried out at an appropriate time. Traditional knowledge should be explored to address the impacts of CC in Palau. Use existing knowledge and results from studies in Palau to develop adaptation methods to address CC.</p> <p>-Introductory remarks by Prof. Holland: Gratitude to Palauans for their great efforts in sustaining their marine environments and acknowledging future generations and their significance in sustaining their natural resources for them. Hawaii conference – FSM, Palau, RMI were well represented. Five Cs: collaboration, community, culture, conduct, conservation.</p>
	Presentation 1: World Current Status of Climate Change Projections	Prof. Elisabeth Holland (Director PACE-SD, USP)	<p>-PACE-SD introduction – EU-GCCA and Future Climate Leaders projects Postgraduate students.</p> <p>-EU – 15 countries and 40 communities for community engagement component (CCA).</p> <p>-Pacific Islands People and Climate Change Symposium (10-12 December 2012).</p>

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			<p>-Results from the 5th IPCC report this year – Sea level is rising: from ocean expansion (60%) and melting glaciers (40%). Total sea level rise to date globally since 1850: 20cm; Total sea level rise to come by 2100: 50-200cm; Since Rio in 1992 Global sea level has risen 5.5cm</p> <p>-Northern Pacific has experienced more sea level rise than any other Pacific area – results from the PSCCP report (Australian research). This region’s ocean also takes up a lot of CO₂ (26% of the CO₂ produced by burning fossil fuel is absorbed by the oceans).</p> <p>-Traditional knowledge is significant to prepare for the CCA.</p> <p>-Climate Services Tools – weather forecasts, quantification of mapping of the impacts of sea level rise, weather, drought, floods et</p>
	<p>Presentation 2: Climate Change Projections for Micronesia Challenge Jurisdictions</p>	<p>Liz Terk (Conservation Manager, MCT)</p>	<p>-Micronesia Challenge – RMI, FSM, Palau, Guam</p> <p>-Increase air temperature – annual seasonal (increment 1oC by 2030)</p> <p>-Rainfall – increased rainfall</p> <p>-Extreme events – more extreme rainfall days, less frequent drought, less frequent typhoon (few but intense).</p> <p>-Sea level rise – will continue to rise (between 1-6 inches by 2030)</p> <p>-Ocean acidity – continue to increase over the 21st century.</p> <p>-These will affect the livelihood and food security, coral bleaching, severe droughts, increase coastal erosion. These impacts are enhanced by anthropogenic impacts.</p>
	<p>Presentation 3:</p>	<p>Kiku M.</p>	<p>-Palau is affected by the ITCZ (Inter-Tropical Convergence Zone).</p> <p>-Climate is what you expect and weather is what you get!</p> <p>-Trade winds, average temperature, average rainfall, main dry season (Feb-Apr), Main wet season (May to Oct).</p> <p>-Greenhouse gases, absorbs heat and re-radiates it.</p> <p>Palau’s changing climate – temperatures have increased since 1950</p> <p>-1997/1998 El Nino event</p>

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			<ul style="list-style-type: none"> -2010 – coral bleaching -Coastal erosion, inundation, salt water intrusion.
	<p>Presentation 3: Hope for the Future of Coral Reefs in the Face of Climate Change</p>	<p>Lukes Isechal (PICRC Researcher)</p>	<ul style="list-style-type: none"> -Coral reefs – communities are dependent on these resources for their livelihood. -Ecosystem services – marine resources approximately 24000 USD per hectare. -SST – increase by 3oC. -The acidity of the ocean will increase. -Less and high intensity typhoons. -The rate at which we are approaching the increased figures for temperatures, and increased gases is high. -Ocean acidification experiment at PICRC – cores sent to Massachusetts for CT scan to study growth bands. Collect water chemistry information from waters. -Studies associated with resilient coral species – these are subjecte to various CO2 levels – depending on the results these corals then may be re-planted in areas with high acidity. -Coral bleaching – not all areas are effected equally by the bleachir events – there are resilient coral species which survive these event -MPA – PICRC looks at more than 22 sites around Palau and has be doing so for 20 years. -Well designed MPA network and protection of fish population. -Management should include reducing human-induced impacts. -Reducing CO2 emissions.
	<p>Open Discussion Forum on the Understanding of Climate Change “Climate Change and Community Adaptation: Our Collective Knowledge”</p>	<p>Prof. Elisabeth Holland/Ms. Carol Emaurois</p>	<ol style="list-style-type: none"> 1. Translation of the scientific data for community use? <ul style="list-style-type: none"> - Toolkit through MCT and PIMPAC takes scientific and tradition knowledge to promote CCA in communities. - MPA network – initially through the toolkit and the US EU-GCCA Project is extending it to the other communities. 2. What can be done to stop/stall the CC impacts?

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			<ul style="list-style-type: none"> - Run off into the rivers and oceans – PICRC study trapping sediments by creating artificial wetlands. - Passing regulation to conserve buffering zones along rivers. - TK exists and there is a need to replicate these. <p>3. Health and emissions – what is happening to the controlling emissions associated with transportation and to our health</p> <ul style="list-style-type: none"> - Pacific Islands are rich in hydro-chemical emissions naturally by plants – respiratory diseases, asthma. - Not a lot of systematic measurements taken to ensure quality.
	<p>Presentation 4: Status of other Pacific countries climate change impacts</p> <p>Republic of Marshall Islands (RMI)</p> <p>Federated States of Micronesia (FSM)</p> <p>Republic of Palau, (ROP)</p>	<p>FSM, RMI, & Palau</p> <p>Ms. T. Greenstone</p> <p>Elizabeth Terk</p> <p>Maria Ngemaes</p> <p>(Palau National Weather)</p>	<p>1. Tamara Greenstone: CC Impacts in RMI</p> <ul style="list-style-type: none"> - RMI – 7 feet or 2 meters above sea level – fragile, limited resource base, limited freshwater resources. - CC impacts 1991 – present: 5 typhoons, 5 high surges, serious droughts, sea surges, erosion, water and food security increased temperatures and health issues. - Annual rainfall decreased, sea level increased and ocean acidification increased (very vulnerable). - RMI is currently being hit by a drought. Residents get water through the process of Reverse Osmosis but because the drought is prolonged, the wells and reservoirs are drying out. (It hasn't rained on Ebeye Island for the last 5 months. - There is an early warning system through the Met. Services; a lot more projects are focusing on water management. - Detecting leaks in the pipes – the authorities are trying to address this issue but because we do not have rain, these leaks are difficult to detect. - Compost toilets: this has been trialed with one

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			<p>community and they have collectively agreed to adopt this practice.</p> <ul style="list-style-type: none"> - Vili shared his experience from Tuvalu who experience the same problems. Vili also stressed that awareness is critical to addressing this issue. <p>2. Liz Terk: CC Impacts in FSM</p> <ul style="list-style-type: none"> - The four islands differ – Pohnpei, Yap, Chuuk, Kosrae - Experience: typhoons, droughts, storm waves, landslides etc - 1997-1998 ENSO Event; people experienced more than drier normal conditions; people started fires to clear land as a result, landslides occurred; fishery impact – current shifted, pelagic fish also moved. - 2008 – high inundation - 70% population and infrastructure located by the coast leads to coastal erosion. - Slow salinization of wetlands and lakes; taro lands have been affected. - Pohnpei does not consider drought as a major problem. However, most recent clearing of forests has resulted in the wetlands and rivers to dry up. <p>Q&A:</p> <ol style="list-style-type: none"> 1. Any successful stories to/at addressing the impacts of CC? <ul style="list-style-type: none"> - Not many examples as yet – some from CSP. 2. What is the current situation with the inundation of swamp taro patches? <ul style="list-style-type: none"> - This has not recovered completely. The Chuuk Agricultural Department is trying various measures eg. raising taro patches; introducing salt tolerant taro species etc within outer islands that were affected. 3. What measure is being taken to replant trees/forest along

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			<p>the river that feeds into the reservoir?</p> <ul style="list-style-type: none"> - CSP has a project currently running that addresses this issue.
	Presentation 5: Climate Change and Coastal Erosion: The Rock Islands in Palau	Dr. Pat Colin Coral Reef Research Foundation	<ul style="list-style-type: none"> -The beaches in Palau are very unstable; they change for a variety of reasons. Each beach differs from the other; those of rock island, atolls, high islands etc. - More details in the presentation.
2 (16 APR 2013): Communication and Adaptation Planning	Presentation 6: Climate Change and Taro Patches	Shirley Koshiha (PICRC) & Fred Sengebau (Palau Bureau of Agriculture)	
	Presentation 7: Climate Change and Marine Protected Areas	Steven Victor	
	Communications Training	Ms. Sarika Chand/Mr. Chris Ward	<ul style="list-style-type: none"> -Introductions 1. Group Work 1 (Groups by Country – Palau, FSM, RMI, Fiji): Challenges and successes during presentations with communities (5 points). <ul style="list-style-type: none"> - Fiji: Use of pictures/videos – visual aids; willingness to learn; use of religious, beliefs, traditional mechanisms (stories, dramas, patterns, dances, song); preparedness reactivity, adaptability; use of champions, sharing successes, network; literacy and ability to communicate in English. - FSM: Brochures – visual aids; games; Skits; Sakau (traditional drink); Hands on activities and sakau group discussions. - RMI: Reimaanlok – Step forward, better future, grassroots, national engagement process (awareness, buy-in/commitment of community (LRC), adaptation plans (focus groups), monitoring plans, management

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			<p>plans, ordinance) – While its RMI as a whole, it's a guide contextual to each atoll/islands; translation of everything not Marshallese (local language awareness); photos, video, radio (national), songs; Coastal Management Advisory Council (CMAC) (coordinating/advising group, I/A, MIMRA, EPA, R&D, Land Grant, USP, CMI, MOE, IO OEPPC, WUTMI, MICS); smaller awareness teams; food</p> <ul style="list-style-type: none"> - Palau: Community management plan; fact sheets – ecotour; revenue generating activities, Ebiil camp package (local community members – fishermen, ladies from community teach them knowledge about taro patches come and teach the students); capacity building, APCO alliance of Palau Conservation Officers (enforce regulations of each State); Palau Environment Conservation Consortium. <p>Outcome of Group Work 1:</p> <ol style="list-style-type: none"> 1. Strong Leadership 2. Champions to push forward actions 3. Identify situations in communities to that would be easy for communities to associate with – eg. salt intrusion on taro patches 4. Use success stories, examples from other sites 5. Approaches used to convey the information to the communities so they take ownership of the activities.
	Adaptation Planning	Ms. Carol Emaurois/Mr. Wayne Andrews Ms. Aliti Koroi/Ms. Tamara Greenstone/Ms. Liz Terk	Wayne Andrews: <ol style="list-style-type: none"> 1. Stakeholder Analysis <ul style="list-style-type: none"> – how is the community divided? At the end of this there the entry question. How would you enter the community – whose permission do you seek? (For instance in Palau it's the Traditional Leaders and the Governors). – It is essential to have the community input for this purpose

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			<p>2. Awareness</p> <ul style="list-style-type: none"> - By use of the flipchart. - Overview of Climate Change - Using the chart, which is relevant to the community (a: per the situation in the community). - Prior to addressing adaptation, they community should understand the background behind climate change so that everyone's on the same page. <p>3. Adaptation (Group Work)</p> <ul style="list-style-type: none"> - Draw a map of your site (include: Natural and Cultural Resources). - Create a seasonal calendar - Develop a historical timeline
			<p>Group 1 – Community in Majuro. Heavily populated. Not many water catchments. No schools. 2 churches.</p> <p>Group 2,3,4 – Dummy communities</p>
			<p>Outcomes:</p> <p>Planning Process (LEAP – The Local Early Action Planning and Management and Adaptation Planning Process):</p> <ol style="list-style-type: none"> 1. Stakeholder Analysis 2. Awareness 3. Assessing Non-Climate Threats <ul style="list-style-type: none"> - Resource Mapping - Using the Resource Maps to develop Seasonal Calendars, Development of a Historical Timeline 4. Developing a local climate story 5. Assessing vulnerability of target resources 6. Identifying early actions to address vulnerability 7. Finalizing LEAP

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3 (17 APR 2013): Adaptation Planning		Adaptation Planning (Continued)	Assessing vulnerability of target resources <ul style="list-style-type: none"> - Identify the natural and cultural resources, identify the threats to these resources; identify the reasons for the threats (whys) and the reason for the threats, until you reach to the root cause of the problem. - Identification of potential actions that can be taken to address the causes. - Working with a budget to workout an action plan for the activities.
	Future Climate Projections	Prof. Elisabeth Holland (Director PACE-SD, USP)	1-2m sea level rise scenarios were presented. Participants, in group worked out action plans to address the issue as per the LEAP method.
	MIRADI – Adaptive Management Software for Conservation Project	Ms. Lukes Mr. Steven	Brief on software used for conservation planning in Palau communities.
	Marine Resource Management - Fisheries	Dr. Douglas Rasher	Brief on adaptive fisheries management: building resilience against climate change – resilience, recovery from disturbance.
4 (18 APR 2013): Adaptation Planning	Marine Resource Management – Fisheries (continued)	Dr. Douglas Rasher	Exercises on effectiveness of MPAs on inshore fisheries management.
	Disaster Risk Management (DRM)	Dr. Helene Jacot Des Combes	Brief on DRM by Helene. Timeline exercise associated with natural hazards, disasters.
	Agricultural Food Security	Mr. Viliame Iese	Brief on Food Security. Group Activity: FSM: Pakin – <ol style="list-style-type: none"> 1. Major Crops: Giant taro, tapioca, coconut and breadfruit; Minor groups: Mewk, lime, papaya, banana, soursop 2. Impacts: 2011: Minor salt intrusion, over harvesting of coconut trees/senile coconut trees, changes in weather patterns changing breadfruit seasons, affect growth of bananas. 3. Community Response: raised beds, fermented breadfruit.

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			<p>Palau (All sites):</p> <ol style="list-style-type: none"> 1. Major crops: coconut, taro; Minor: sweet potato, banana, breadfruit, sour sop, papaya 2. Impact: Texture affected or DIE! 3. CC responses: storm surges (research on finding more resistant variety of taro; alternative farming space), floodir (create channels to divert water), drought (leave the vegetation around the taro patch (don't cut it; increase the size of the hole)). <p>RMI: Namdrik</p> <ol style="list-style-type: none"> 1. Major crops – Bob (pandanas), breadfruit, taro, coconut, lime, mountain apple, papaya; Minor – coconut stem 2. Impacts – drought (breadfruit trees do not flower/seeds, coconut trees dry – coconut no meat, taro pits dry); storm surges – breadfruit trees, coconut trees fall over, land loss planting, salt intrusion); invasive species (destroying breadfruit trees). 3. In the RMI their have long suffered droughts – fermented breadfruit and preserved pandana.
5 (19 APR 2013): Adaptation Planning	Palau's taro fields protect the coral reefs by trapping eroded fine sediments	Shirley Koshiba	<p>-Increase in sedimentation is a major issue facing coral reefs worldwide because of poor land-use practices. Major watershed in Palau is approximately 86 square miles (?). - Study focuses on assess the sediment trapping capability of taro patches -Study sites: Aimeliik and Airai (Babeldaob 😊) -Results over a period of 7 months</p> <ul style="list-style-type: none"> - Airai was able to trap – 879Kg; Aimeliik: was able to trap 8223Kg, and 1 tonne. - sediment accumulation rate – on average, each site was able to trap 90% of the sediment.

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			<p>-Traditionally, culturally women tend to taro patches in Palau</p> <p>-Based on the results, taro fields play a role in mitigating environmental degradation in coastal areas.</p> <p>-Taro is also the main staple crop in Palau.</p> <p>-The use of taro as a staple food in Palau is still very evident, however, due to food imports, people are now depended a lot on western diet.</p>
		Ms. Carol Emaurois	-Palau background
	Country Presentations	Current progress on the USP EU-GCCA Project	<p>RMI:</p> <ul style="list-style-type: none"> - 3 sites (Namdrik Atoll, Lae Atoll, Jenrok, Majuro) - Namdrik - V&A completed, primary sector: Food Secur coconut replanting project - Lae – very isolated, island in the north, severe drought Water security - Jenrok – V&A not complete - National training will be done in conjunction with another training in August 2013 <p>FSM:</p> <ul style="list-style-type: none"> - MCT is coordinating – sub-contracting local NGOs in ea states - 3 sites identified - NPAC set up; RAs completed - Walung (Kosrae): Organize a team with partners, ident stakeholders, outreach and awareness, V&A assessme - Piis (Chuuk): assistance needed - Pakin (Pohnpei): V&A assessments, Adaptation Plannir Implementation, gather lessons learnt. MPA establishe and management plan - National Trainings: would need to be decided. <p>Palau:</p> <ul style="list-style-type: none"> - NPAC formed in June 2012 - 3 sites selected (RAs completed), November 2012

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			<ul style="list-style-type: none"> - 3 sites: Kayangel, Ngaraad, Ngardmau - V&A planned for May 2013. - National Training in Palau planned for June 2013
	Wrap up of Adaptation Planning	Ms. Carol Emaurois	<p>+ves of training</p> <ul style="list-style-type: none"> - Food, sakau - Venue/view - Palau - Range of participants (different countries and centers) - Constructive discussions - Great energizers - Empowerment – a feeling of good support to carry out the work - Networking - Very interactive - Commitment - The organization of everything was good - Adaptation Planning – richer; evolution of LEAP toolkit - Concepts of the dummy islands - Small groups – easy learning - Simple presentations - Gifts - Carol - Involvement of Palau NPAC <p>-ves of training</p> <ul style="list-style-type: none"> - A field trip in the middle of the training - Too much sugar
	Closing Remarks	Prof. Elisabeth Holland	-Vote of thanks by Prof. Holland
	Certificate Presentation	Prof. Elisabeth Holland/PICRC Board Chairman, Dr. Patrick Tellei	-Certificate presentation