Victorian Climate Initiative

PROJECT WORKPLAN

21 May 2013 – 20 May 2014

1. Project Definition

Project ID	VicCI - Project 1
Project Title	Understanding decadal variation of seasonal climate predictability and the potential for multi-year predictions
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2013	Milestone	Achievement Criteria	Due date
1	Six-monthly progress report including (1) Progress against deliverables, (2) Research effort over the period, (3) Science achievements, (4) Publications/presentations, (5) Communications	Report accepted by Project Management Committee for incorporation into overall Progress Report to be submitted to the Steering Committee	7 Sept 2013
2	Twelve-monthly progress report with the same 5 sections	Report accepted by Project Management Committee for incorporation into overall Progress Report to be submitted to the Steering Committee	21 Apr 2014
3	Draft Annual Work plan for next year	Work plan accepted by Project Management Committee to be recommended to the SC	21 Apr 2014
4	Report on research undertaken for year (objectives, methods, results, discussion, conclusions, links to other projects, next steps) as contribution to the Program Annual Research Report	Project Annual Research Report accepted by Project Management Committee for incorporation into overall Program Annual Research Report to be submitted to the Steering Committee.	1 May 2014
5	Scientific paper on decadal variation of ENSO variability and predictability	Paper submitted for publication	1 May 2014
6	Scientific paper on role of SST trend for 2010 floods	Paper submitted for publication	1 May 2014

2. Project Details

Introduction:	Climate in SEA varies markedly on multi-year and decadal time scales, impacting the capability to make seasonal climate predictions but also obscuring detection of anthropogenic climate change (ACC). Importantly, the capability to make predictions of seasonal climate variability in SEA varies decadally, with decades of high skill being associated with high ENSO variability and decades of low skill being periods of quiescent ENSO variations. Based on published findings, the epoch 1960-1979 exhibited relatively low ENSO variability, 1980-1998 exhibited high ENSO variability and since 1999 ENSO variability has been low. Together with these variations in ENSO variability, since 1999 ENSO activity has been observed to shift west in the Pacific. The relationship of these variations of ENSO variability and predictability with epochs of increased global warming and intensification of the subtropical ridge needs to be explored. Furthermore, the epochs of high/low ENSO variability may be related to warm/cold phases of the Interdecadal Pacific Oscillation (IPO, noting that the IPO is not an oscillation in the true sense because its behaviour is more episodic without exhibiting a prominent periodicity). Furthermore, there is clear evidence that some specific ENSO events are predictable for 1-2 years but many are only predictable 2-3 seasons in advance. Further, ENSO variability today is acting on a warmer mean state and this warming may have played a role in changing both the behaviour of ENSO and the ENSO teleconnection to SEA (e.g. there is some evidence to suggest that the La Niña pluvial phase may be more intense now than previously). Understanding these changes will provide more confidence for predictions of short term climate variations in the future.
Activity 1. Description	Diagnose decadal changes in the tropical ocean-atmosphere mean state and relate to decadal changes in behaviour of ENSO and to decadal changes in predictability of ENSO using ocean and atmosphere reanalyses and POAMA seasonal hindcasts for the period1960-2010.
Activity 1. Methodology	Using POAMA Ocean Reanalyses and POAMA hindcasts, diagnose decadal changes in variability and predictability of ENSO for the three key epochs (1960-1979, 1980-1998, 1999-2010) and determine role that decadal changes in mean state played for driving changes in ENSO variability and predictability.
Activity 1. Deliverables	Scientific paper that describes decadal variation of ENSO predictability and relates these changes to decadal variations of ENSO activity and mean state.
Activity 1. Outcomes	New insight into the upper limit of ENSO predictability and how this upper limit varies in time. New insight into how ENSO behavior varies decadally and how it might vary in a changed climate, which will have strong implications for climate variability and prediction in SEA.
Activity 2. Description	Explore impact of warming SSTs for the extreme rainfall of the La Nina event in 2010 with idealized model studies (imposed SST runs).
Activity 2. Methodology	Using POAMA coupled model and ACCESS uncoupled model, investigate the response of eastern Australian rainfall during the 2010 La Niña event to the warming trend in SST north of Australia.

Activity 2. Deliverables	Scientific paper on the role of the warming trend in SST for the 2010 floods
Activity 2. Outcomes	New insights into how La Niña affects rainfall in Australia (and in particular in Victoria) and how these impacts might change in a warming world.