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HOW WILL THE PROJECTIONS FROM THIS STUDY BE USED?

- ✓ V3 supports Singapore Government policy and adaptation planning into the future.
- ✓ V3 supports downstream climate impacts research and collaborations.
- ✓ V3 supports SEA regional research and development.
- ✓ V3 supports global initiatives on climate projections.

The data produced by V3 constitute a unique dataset for Singapore and the SEA region, using the latest climate models and global warming scenarios used in the IPCC AR6. The data and the V3 Stakeholder and Science reports, together, constitute the most advanced information on climate change available over Singapore and SEA. V3 will form the basis of new as well as continuing adaptation planning efforts (e.g., based on V2) for Singapore, to prepare for the impact of climate change in various sectors, such as water, food, human health, energy, infrastructure, biodiversity, etc.

In addition to the use of V3 to inform long-term planning efforts for Singapore, the findings of the study also lead to improved understanding of the science of climate change and their drivers over Singapore and SEA region.

The 8km V3 data for the region will also be shared with the research community and with international partners and collaborations like the Food and Agriculture Organization of the United Nations to enable new research in climate change and impacts studies for Southeast Asia.

6.1 Adaptation planning in Singapore

Singapore takes a science-based approach to adaptation planning. We will use the scientific climate information in our policy making, such as in planning the adaptation features required to combat future climate change, and in assessing the effectiveness and cost-benefit analysis of plans to protect Singapore against the negative impacts of climate change and climate variability.

Despite international efforts to limit the rise in global temperatures, the effects of climate change are already upon us. V3 findings tell us that we can expect higher sea levels, hotter days, and more extreme weather events from now to 2100 under the worst-case scenario. To be prepared, Singapore will further strengthen and accelerate our climate defences, and review our adaptation plans.

Climate science will continue to evolve and improve, and Singapore must continue to keep up with the scientific advancements. New models and data will need to be incorporated,

and new methods and approaches will need to be explored. Robust, updated projections of future climate will continue to play a key role in supporting Singapore's efforts to build resilience to climate change.

6.2 Climate Impacts Science Research

V3 data will also form the basis for deeper research in climate impacts science for Singapore, including through the National Sea Level Programme (NSLP) and the Climate Impact Science Research (CISR) Programme launched in July 2022. Focusing on five key priority areas—sea level rise; water resource and flood management; biodiversity and food security; human health and energy; and cross-cutting research to bridge science-policy translation – the CISR will study climate impacts issues relevant for long term climate adaptation planning for Singapore.

6.3 Regional outreach

In addition to supporting local adaptation planning efforts of Singapore Government agencies, V3 data will also be shared in the region with regional and international agencies and the scientific community.

6.3.1 ASEAN Specialised Meteorological Centre (ASMC)

MSS hosts the ASEAN Specialised Meteorological Centre (ASMC), which was officially established in January 1993 under the auspices of the ASEAN Sub-Committee on Meteorology and Geophysics. The key roles of the ASMC include:

- Undertaking research and development to improve scientific understanding and prediction of weather and climate systems of significance to the region.
- Serving as the ASEAN regional centre for monitoring and assessment of land/forest fires and haze, including provision of early warning for transboundary haze.
- Conducting regional capability development programmes to enable ASEAN National Meteorological Services leverage advances in science and technology to support important economic sectors.

In line with the above functions, the ASMC plans to share the V3 data and findings with ASEAN Member States to support the scientific understanding of climate change and impacts within the region. The ASMC will *inter alia* organise activities to train participants from the ASEAN region on the use and interpretation of V3 data and findings, including through workshops and other engagements.

6.3.2 United Nations Food and Agriculture Organisation (UNFAO)

Under the ambit of the Singapore – UNFAO Memorandum of Understanding, CCRS has also embarked on a collaboration with the UNFAO on climate-resilient agri-food systems in SEA. The collaboration will entail CCRS sharing V3 climate projections data over the Southeast Asian region for incorporation into

UNFAO's climate risk assessment tools. CCRS and the UNFAO are also exploring joint workshops to train ASEAN Member States in using the UNFAO's tools and the V3 data. These would enable regional users of UNFAO's tools to conduct more detailed agricultural climate impact assessments at the national level.

6.3.3 Coordinated Regional Climate Downscaling Experiment (CORDEX)

The CORDEX-Southeast Asia (CORDEX-SEA) is an important regional branch of the global CORDEX community focusing on providing regional climate change projections in the SEA region. While there are overlaps between the two efforts (CORDEX-SEA CMIP6 regional projections and V3) there are important differences too that make them complement each other for carrying out more robust physical climate change assessment and impact studies over the SEA region.

There are overlaps such as (a) some similar CMIP6 GCMs, (b) similar domains with small differences in latitudinal and longitudinal extents, and (c) some common scenarios (SSP1-2.6 and SSP2-4.5). There are some important differences such as (a) CORDEX-SEA uses SSP3-7.0 as their highest emission scenario, whereas V3 uses SSP5-8.5, and (b) the CORDEX-SEA primary spatial resolution for regional climate change projections is 25 km, whereas for V3 it is 8 km. Thus, the two datasets are highly complementary.