



Asia Regional Resilience to a Changing Climate (ARRCC) Met Office Partnership newsletter

June 2021



Welcome

Welcome to the latest edition of our ARRCC Met Office Partnership newsletter. This edition covers the period from March 2021 to June 2021, highlighting some of our key activities and events during this time. We hope you will find the articles informative.

If you have been forwarded this email and would like to receive ARRCC newsletters direct in future, please [email us](#) with your details and consent.

The Met Office ARRCC team

Impact-based forecasting (IBF) - work package 1

Department of Hydrology and Meteorology (DHM) technical training event - May 2021

In May 2021 a technical training event was delivered to DHM, Nepal staff to increase their understanding of, and capability in, medium range forecasting and downscaling of current forecast to the local level required in the IBF pilot. This underpins the IBF pilots service by extending the period of the forecast and will hopefully enable an increase in the notice period of the warnings. During this technical training, work also began on the development of the IBF pilot product, considering stakeholder requirements.



“State of the Science” workshop - May 2021

In May 2021, a one day “State of the Science” Workshop was held in conjunction with the University of Durham, SAJAG-Nepal programme in Nepal. This workshop invited Disaster Risk Reduction Management Authority (NDRRMA) and other national and provincial level stakeholders, along with DHM forecasters, to a half day workshop exploring the current science and limitations of both landslide forecasting and weather forecasting. It explored the complexity of the relationship and links between landslides and precipitation, spatial patterns of impacts from landslides, as well as emergent patterns in recent landslide occurrences in Nepal. It also provided an overview of current tools which can support the forecasters in their risk assessment during the upcoming monsoon.

Training delivered by DHM and NDRRMA

In May 2021, DHM and NDRRMA, with support from the Met Office, delivered provincial level training based on the national training in March 2021 to engage stakeholders at a local level, educate them in the aims and objectives of impact-based forecasting, and gather information to develop localised impact tables for each of the municipalities. These impact tables will ensure that the warnings issued as part of the IBF pilot are able to highlight vulnerable locations at the local level therefore making the warnings more actionable. This activity also ensured sustainability of this work post ARRCC by empowering DHM and NDRRMA to deliver training themselves. It was identified that training at local level would need to be in Nepali. Therefore, while support was provided in the form of lesson plans, and key aims and objectives, the delivery was entirely conducted by DHM and NDRRMA. This allowed them to build strong relationships with local stakeholders and take ownership of the IBF product.

Technical forecasting support for DHM Nepal - June 2021

Nepal and Bangladesh co-production workshops



In May and June 2021, the SCIPSA team successfully delivered the third and final module on 'Co-designing national seasonal forecast products and enhancing user experience' for the Department of Hydrology and Meteorology (DHM) in Nepal and the Bangladesh Meteorological Department (BMD) individually. This training supports the development of pilot seasonal agricultural advisory services for farmers in Nepal and Bangladesh.

Bangladesh co-production workshop team from BMD, Department for Agricultural Extension (DAE), Bangladesh Rice Research Institute (BRRI), Bangladesh Agricultural Research Council (BARC)

Despite the challenges of collaborating in a virtual environment, the workshops have been successful in promoting a co-productive approach to climate services, in particular using co-development and design to further enhance the national seasonal forecast product, which aims to improve the interpretation of seasonal information for use in agricultural advisory bulletins. The aim was also to promote dialogue between national meteorological services and practitioners and develop the tools and experience to implement the essential two-way processes of co-production.

A draft implementation plan has been developed for Nepal with the aim to test the enhanced national seasonal forecast product during the October to December 2021 and December to February 2021/22 seasons.

Climate Analysis for Risk Information & Services in South Asia (CARISSA) - work package 3

Developing gridded climate observations for Pakistan



The Met Office have been collaborating with the Pakistan Meteorological Department (PMD) to build gridded observed climate datasets for Pakistan. The project, led by Tim Mitchell and Dan Hollis at the Met Office, has adapted the software "Climate Grid" developed by the UK National Climate Information Centre (NCIC), and shared this with colleagues at PMD.

Group photo from PMD Climate Grid workshop - 8 June 2021

A successful training workshop was held in June 2021 with PMD staff in Islamabad and Karachi to support the use of the software. PMD are one of the first organisations outside the Met Office to use Climate Grid, providing a new capability to generate improved observed climate products (e.g. long-term temperature and rainfall trends and anomalies in Pakistan), as well as support verification of seasonal forecasts and validation of climate models.

Pakistan sea-level science and projections training

Building on the success of a sea-level training workshop in Bangladesh in November 2020, a similar training was delivered to organisations in Pakistan in collaboration with PMD and the International Centre for Integrated Mountain Development (ICIMOD). The training, led by Jennifer Weeks at the Met Office, took place from 21-23 June 2021. It included talks from Met Office sea-level experts on a range of topics, from global and regional contributions to sea-level change, to observations and model projections, as well as a presentation from PMD on the range of local factors (including non-climatic factors, such as tectonic activity) affecting sea level change along the Pakistan coast.



Group photo from Pakistan sea-level science and projections training workshop – 21st June 2021

A final panel discussion focused on the application of sea-level science and future areas for research and investment, including coastal ecosystems and GPS-enabled tide gauges. The training was attended by 21 participants including staff from PMD, the Pakistan Navy, the National Institute for Oceanography and other organisations involved in coastal risk assessment and research.

VALUE - work package 4

Workshop kickstarts study on socio-economic benefits of Weather and Climate Services in Pakistan

ICIMOD, the University of Leeds and the Pakistan Meteorological Department (PMD) initiated the evaluation of the socioeconomic benefits of climate services in Pakistan. The initiative will study the usefulness of the weather and climate services (WCS) provided by PMD, particularly the agro-meteorological advisories to cotton and wheat farmers in the agricultural provinces of Punjab and Sindh because rising temperatures, untimely rains, increasing flood magnitude and frequency, and prolonged droughts have threatened the productivity of these major crops as well as the national economy and food security.

The survey-based evaluation will obtain the net benefits of using WCS by comparing the perspectives of users and non-users of the WCS over a production season. ICIMOD organised an Inception Workshop on 30 March 2021, on a virtual platform due to restriction of physical movement amidst the COVID-19 pandemic, with the purpose of introducing the study and gathering feedback from stakeholders such as line agencies, academia, researchers, agromet experts, and representatives of the farming communities.

The workshop provided important directions for considering cultural sensitivities and directing questions targeting women empowerment while ensuring local ownership of the study results.

WORKSHOP HIGHLIGHTS

WCS are becoming more important for providing respite to farming communities from climate variability. Regional Cooperation with Hydromet Authorities is key to improving these services

Pema Gyamtsho, Director General, ICIMOD

Accuracy and reliability of medium and long range weather forecasts must be improved to support farmers and policy makers to plan production and imports

Muhammad Riaz, Director General, PMD

Last mile connectivity is essential to ensure that smallholder farmers can benefit from WCS

Barak Ullah, Additional Secretary, Agriculture of South Punjab

The ARRCC programme

The UK aid-funded ARRCC programme is being led by the Met Office and the World Bank and aims to strengthen weather forecasting systems across Asia. The programme is delivering new technologies and innovative approaches to help vulnerable communities use weather warnings and forecasts to better prepare for climate-related shocks.

Asia is highly vulnerable to natural disasters and this vulnerability is expected to increase. The ARRCC Met Office Partnership (MOP) programme is targeting the most vulnerable countries in the region, primarily Bangladesh, Pakistan, Nepal and Afghanistan, and will support:

1. enhancing regional collaboration and capability for provision of weather and climate services;
2. development of regional and sub-regional forecasting and early warning systems;
3. improving capacity in focus countries to develop and disseminate impact based forecasting (across multiple timescales) to climate sensitive sectors and vulnerable communities;
4. development of new technologies to deliver climate information to vulnerable groups; and
5. the mobilisation of additional resources for building climate and environmental resilience.

The Met Office is working closely with a number of key partner organisations in the region to support delivery of ARRCC, including:

- UN bodies such as the World Meteorological Organization (WMO), the World Food Programme (WFP) and the United Nations Economic and Social Commission for Asia and the Pacific (UNESCAP);
- existing regionally mandated organisations involved in development of weather and climate services, including the International Centre for Integrated Mountain Development (ICIMOD) and Regional Integrated Multi-Hazard Early Warning Systems (RIMES) and research organisations such as the International Maize and Wheat Improvement Center (CIMMYT);
- NGOs such as the Red Cross Climate Centre (RCCC); and
- National Meteorological and Hydrological Services (NMHS) and related agencies with responsibility for disaster risk management.

Find out more on the [**ARRCC Met Office Partnership webpages**](#).

Meet the Met Office ARRCC team



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