

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

October 2022



Welcome

Welcome to the final edition of our ARRCC Met Office Partnership newsletter. This edition covers the period from June to October 2022, highlighting some of our key activities and events during this time. We hope you will find the articles informative.

Thank you to all partners and collaborators who have worked on the ARRCC programme between 2018-2022, it has been greatly appreciated by the programme team, and has meant that we have been able to achieve impactful results.

With your help, ARRCC has been able to support over 2 million people in South Asia to have improved access to actionable weather and climate services, strengthening disaster resilience, anticipatory action and guiding climate change adaptation.

ARRCC has sustainably built capacity in weather forecasting and seasonal to long term climate prediction through a wide variety of activities including: Co-development of cross-sectoral, multi-hazard impact-based forecast services in focus countries, strengthening regional cooperation across South Asia through support to regional climate outlook forums e.g. SASCOF. ARRCC has also supported priorities under the South Asia Hydromet Forum, deploying innovative approaches to ensure delivery throughout the COVID-

19 crisis; and co-producing evidence on future climate change impacts for climate-sensitive stakeholders and policymakers.

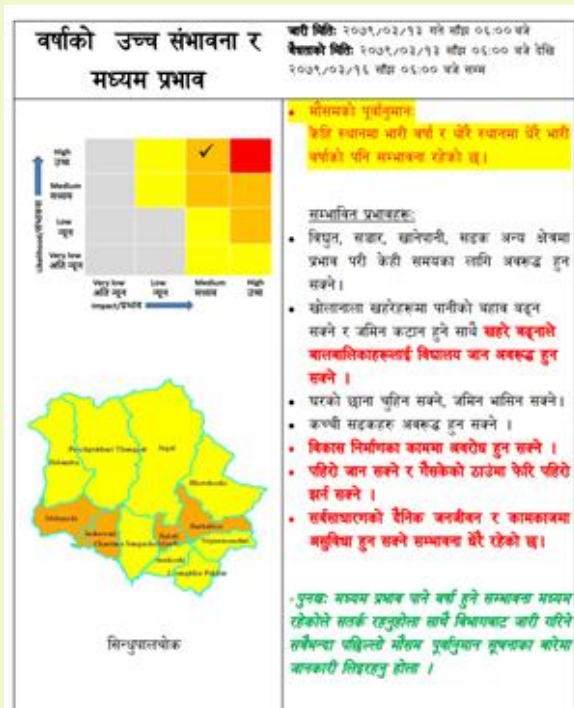
Regional to national training and capacity building activities has enhanced capacities of 800 people across National Meteorological and Hydrological Services, national disaster agencies and regional weather and climate service providers. In addition, the £12m programme provided significant return on investment and value for money by leveraging additional investment in the region.

We are currently in the process of scoping the priorities for a follow on programme to ARRCC, 'Weather and Climate Information Services (WISER) Asia-Pacific' which is being developed as part of the UK Government's [Foreign Commonwealth and Development Office \(FCDO\) Climate Action of a Resilient Asia \(CARA\) initiative](#). We will continue to discuss priorities with stakeholders prior to a launch, expected in 2023, and we will keep you informed in a future newsletter, in due course.

The Met Office ARRCC team

Impact-based forecasting (IBF) - Work Package 1

Impact Based Forecasting pilot service for the agricultural sector



Work Package 1 Impact Based Forecasting (IBF) had an in person visit to Nepal in June. The aim of the visit was to work with the Department of Hydrology and Meteorology (DHM) Nepal and their key stakeholders to develop and agree a plan for Phase 2 of the IBF pilot, with the focal hazard again being monsoon rainfall and impacts including landslides.

Ahead of the visit, field visits took place to Sindhupalchowk district in May where key focal persons were consulted on their views for service enhancement, and new stakeholders mapped. This, along with feedback gathered through the Phase 1 pilot itself, helped shape improvements ahead of Phase 2.

Following the success of Phase 1, it was agreed to extend the range of recipients in Phase 2 in Sindhupalchowk. These now include representatives from Security Forces, Health, Transport, Media, NGOs and emergency services. The warnings are communicated by email and a group message app, Viber (similar to WhatsApp). The Viber group has the added advantage of doubling as a feedback mechanism for the stakeholders to provide impact information to enable verification, and information about mitigations implemented. Other mechanisms were agreed to share impact information including social media, email, Google forms, and telephone.

Rusawa, Baglung and Myagdi also remained involved in Phase 2 with recipients limited to NDRRMA staff, similar to Phase 1, allowing comparison of approaches to message dissemination. Representatives from these districts also fed into the review process through attending the wider stakeholder workshop which was held during the visit. These improvements, across all districts, included; warnings being issued on an ad-hoc basis (i.e., not routinely on a daily basis), with the ability to cover any time period. This helped increase the warning lead time, and also ensured that the likely event duration was better reflected as this may change the actions/behaviour of stakeholders in response to the warnings. The resolution of warning for Sindhupalchowk was also increased, allowing differentiation of warning level by municipalities, offering better opportunities to target mitigation measures. The first warnings under Phase 2 were issued in June.



Image of Nepal workshop, June2022

Work Package 1 Impact Based Forecasting (IBF) also had an in person visit to Bangladesh in July. One of the aims of the visit was to progress the co-development of the IBF product, which underpins the IBF pilot

service. The focus of this IBF pilot is to support the early warning of Tropical Cyclones. The first step in this process was to work directly with Bangladesh Meteorological Department (BMD) to update the draft product. This was then shared with key representatives from the Red Cross/Red Crescent Climate Centre (RCCC) and the Bangladesh Red Crescent Society (BDRCS) to seek their feedback. Further modifications were made to the product based on their insightful feedback.



Image of Bangladesh stakeholder workshop

During the visit a stakeholder workshop was held to share the IBF product with a wider group of stakeholders which included representatives from RCCC, BDRCS and the Cyclone Preparedness Programme (CPP). CPP play a vital part in enabling local level anticipatory action to help reduce the impact of Tropical Cyclones in Bangladesh. During the workshop the stakeholders reiterated a clear need for the IBF service. It is hoped that BMD will implement the IBF pilot during the upcoming Tropical Cyclone season which commences in September.



Image of Bangladesh Meteorological Department offices

Strengthening Climate Information Partnerships South Asia (SCIPSA) - Work Package 2

Agro-met advisory workshop in Pune, India



At the beginning of June, members of the SCIPSA team were able to engage in in-country activities in Pune, India where they attended a workshop on the production and improvement of Agro-Met Advisories in South Asia as part of the SCIPSA project. The workshop, organised by Regional Integrated Multi-Hazard Warning System for Africa and Asia (RIMES) and India Meteorological Department (IMD) brought together delegates from national hydro-met services and agricultural departments from India, Bangladesh and Nepal to share knowledge and experience of producing national agro-met advisories as well as other related projects and research. For many, it was the first time seeing colleagues since the pandemic and it was clear that everyone was incredibly grateful to be in the same room after so long.

After some useful discussions and presentations from all countries, the second half of the workshop involved a field trip 7 hours northeast of Pune to visit local farms and a Krishi Vigyan Kendra (KVK) agricultural research centre in Aurangabad. These KVKs, which are set up across India, work with local farmers to disseminate the agro-met advisories produced by IMD, and offer on the ground advice and information for farmers. The team also spoke to a number of local farmers who shared their experiences of how the KVK and agro-met advisories have improved their farming practices and profits. Lastly, we had the honour of opening an automatic weather station at the KVK site.

The week-long trip was fantastic to meet new colleagues and re-connect with old ones. Collectively the workshop participants departed for home with information to share, ideas to test and we all have a refreshed excitement and enthusiasm for the work we do and the value it delivers.

Climate Analysis for Risk Information & Services in South Asia (CARISSA) - Work Package 3

Improving the uptake and use of climate change information

Over the past four years, the CARISSA project has helped advance the use of climate change information in South Asia. Working with partners and stakeholders in priority areas, the project has produced new decision-

relevant climate information and supported engagement amongst producers and users of climate information to help guide long-term planning decisions. It is impossible to summarise all of the achievements here. Many outputs are available on the CARISSA webpage (with more to be added soon), and the paper “Advancing climate services in South Asia” published earlier this year provides further detail on activities and remaining challenges.

Thanks to everyone who has contributed to CARISSA over the past four years. We hope the work done has helped address the pressing challenges presented by a changing climate. And we look forward to sustaining key activities in the future, including the launch of the newly established “South Asia Climate Forum” aiming to connect people and organisations across South Asia, supporting knowledge sharing in climate science and services. Watch this space!



SOUTH ASIA CLIMATE FORUM

SCIENCE TO ACTIONS

[Visit the CARISSA web page](#)

[View paper](#)

Increasing the resilience of hydropower in Nepal



Figure 1: Participants from the workshop on 'Increasing the resilience of the hydropower sector in Nepal to climate extremes', hosted by ICIMOD in Kathmandu, Nepal from 12-13 July 2022

Nepal generates 90% of its electricity from hydropower and the sector is geared to expand in the future. However, hydropower is also at risk from extreme rainfall events which can limit power production and damage infrastructure. Climate change has already impacted the magnitude of these events and it is set to increase further in the future.

In July 2022, four Met Office scientists travelled to Kathmandu to meet with colleagues at ICIMOD and key private and public stakeholders from the hydropower sector. Over a two-day workshop, they discussed how climate information could be incorporated into the planning, design, and operation of hydropower plans to make the sector more resilient to climate change.

The workshop was followed by a trip to the Marsyandi and Middle Marsyangdi hydropower projects, where scientists experienced first-hand what hydropower plant looks and feels like, helping to put the conversations from the workshop into context.

VALUE

Work Package 4

We are pleased to announce finalisation of the case study on 'Assessing the Use and Benefits of Weather and Climate Information Services in Pakistan'.

The study which focuses on the agricultural sector included a survey and study of 612 farm households from Punjab and Sindh provinces of Pakistan to evaluate the impact of current weather and climate information services provided by PMD, on farm outcomes from a user perspective. In doing so evaluating the perceptions

of users and non-users of services around the concepts of timeliness, accuracy, and their impact on key farm outcomes, such as profits, costs, revenue, and inputs usage.

In collaboration with the Met Office, the Pakistan Meteorological Department (PMD), and the University of Leeds (UoL), ICIMOD organised a two knowledge sharing workshops during August 2022 in Islamabad and Multan in Pakistan to present and discuss findings of the study to stakeholders, identify recommendations for enhancing current and designing future agro-met advisories from PMD and to identify future research needs.

The study was well received and is expected to help improve the capacity of farmers in Pakistan to integrate weather and climate information services in their decision making and help improve the capacity of PMD to support provision of more accurate, reliable, timely and relevant services for farmers. Final study outputs will be made available on the [VALUE web page](#) in due course.

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);
- National Meteorological and Hydrological Services (NMHS) and related agencies with responsibility for disaster risk management.
- NGOs including the Red Cross Climate Centre (RCCC), the International Federation of Red Cross and Red Crescent Societies (IFRC), Bangladesh Red Crescent Society (BDRCS) and Nepal Red Cross Society (NCRS)

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



Daniel Ryan
Programme Manager



David Corbelli
Programme Director



George Gibson
Deputy Programme
Manager



Catrina Johnson
Work package 1 - IBF -
lead



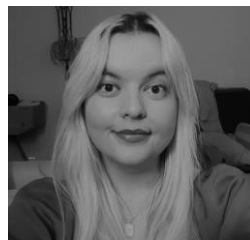
Tamara Janes
Work package 2 -
SCIPSA - lead



Joseph Daron
Work package 3 -
CARISSA - lead



Marta Bruno Soares
(University of Leeds)
Work package 4 -
VALUE - lead



Katherine Hardiman
Communications
Manager

Contact us

Email: arrcc@metoffice.gov.uk

Web: [ARRCC Met Office Partnership webpages](#)

Twitter: [@metofficeww](#) #UKaidAsiaClimate

