SOUTH ASIA HYDROMET FORUM

CLIMATE SERVICES WORKSHOP

Country Presentation: Overview of Climate Services in South Asia

SRI LANKA
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OUTLINE OF PRESENTATION

1. Current Status of Climate Services
2. Forecast Products and Delivery
3. Sectoral Advisories and Applications
4. Tools, Platforms and Data Use
5. Capacity and Gaps
6. Expectation from SAHF CS WG

CURRENT STATUS OF CLIMATE SERVICES

- Overview of institutional setup for climate services
- National Monsoon Forums/Climate Outlook Forums at national or subnational scale
- Interactions with the user sectors before or after the Monsoon Forums

The Department of Meteorology (DOM) is an executive agency of the Sri Lanka Government under the Ministry of defense that is responsible for providing weather and climate related services.
Based on WMO's Global Framework for Climate Services (GFCS) pillars

Services offered :

- Seasonal and S2S climate outlooks
- Sector-specific advisories (Agriculture, Disaster management, Water resources, etc.)
- Climate data services and Technical support

Collaborating Institutions:

- Disaster Management Centre (DMC)
- Ministry of Irrigation and Water Resources
- INGO"s (IWMI, WFP, FAO…)

Department of Agriculture/CEB
NBRO/Plantation ministry
Universities and research institutes

National Climate Services Committee (NCSC) – Agro met Advisory Committee, Water Panel…
Inter-agency meetings on climate-related planning

National Monsoon Forums/Climate Outlook Forums at national or subnational scale

National Monsoon Forums (SW Monsoon and NE Monsoon)

Conducted Twice a year (before SW & NE monsoons) consist of Presentation of seasonal outlook and share sectorial experiences and feedback /discussion

Participants

- Sectoral users (Agriculture, Water, DRR, Health, Power)
- Government agencies (Department of Agriculture, Dept of Irrigation, CEB, Mahaweli Water management, Disaster management Center, NBRO)
- INGOs (UNDP, WFP, FAO, IWMI,UNICEF…)
- Media

Sub-national and Sectoral Forums

- Regional/provincial level forums (piloted with support from, WFP initiatives)
- Water Management secretariat (water panel - First week of every month)
- Agro met advisory committee (Agriculture-specific forums in collaboration with the Department of Agriculture, Plantation ministry, DAD)
- Tailored bulletins (e.g., Agromet Advisory, Water Resource Outlook)

Interactions with the user sectors before or after the Monsoon Forums

Before Forums:
Collaboration with Regional forums SASCOF (Sectoral needs assessment Historical data analysis and Analyze Model outputs)

After Forums:
Dissemination of advisories and Feedback collection, Monitoring of understanding and application

Attending preparedness meetings with DMCParticipate preparedness meetings of provincial or District level

FORECAST PRODUCTS AND DELIVERY

- Major climate products and services currently produced (e.g., seasonal forecasts, S2S, long-term projections) and shard with the users

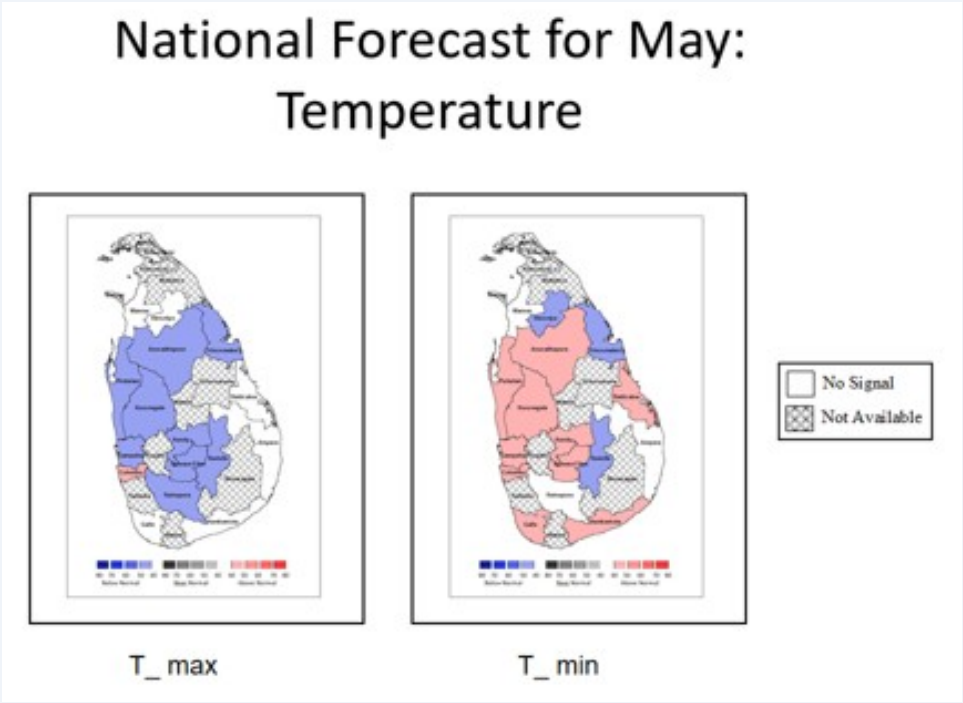
- Customized advisories for various user sectors generated based on these products (e.g., drought/flood indices, heat stress, rainfall anomalies)

- Examples of application of these products

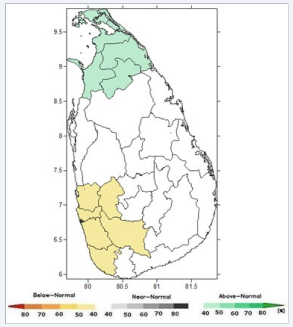
Forecast Products & Services

Seasonal Outlooks (monthly and 3-month, probabilistic)

- Rainfall & temperature terciles
- Onset / cessation dates

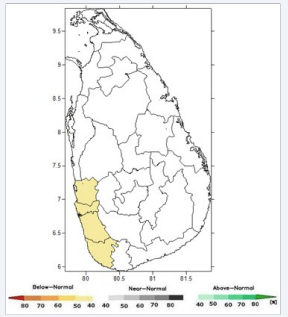


Rainfall forecast for June 2025



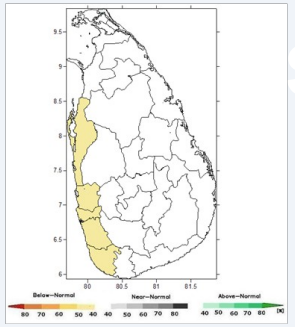
Below normal over western, and Sabaragamuwa provinces and in Galle district and no signal for remaining areas.

Rainfall forecast for July 2025



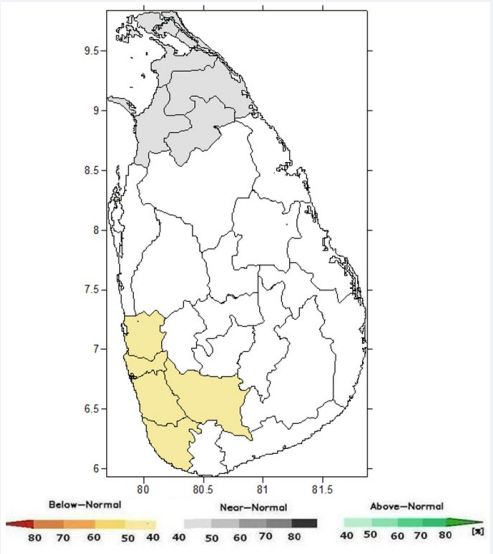
Below normal over western, province and no signal for remaining areas

Rainfall forecast for August 2025



Below normal rainfalls over western province and in Galle and Puttalam district

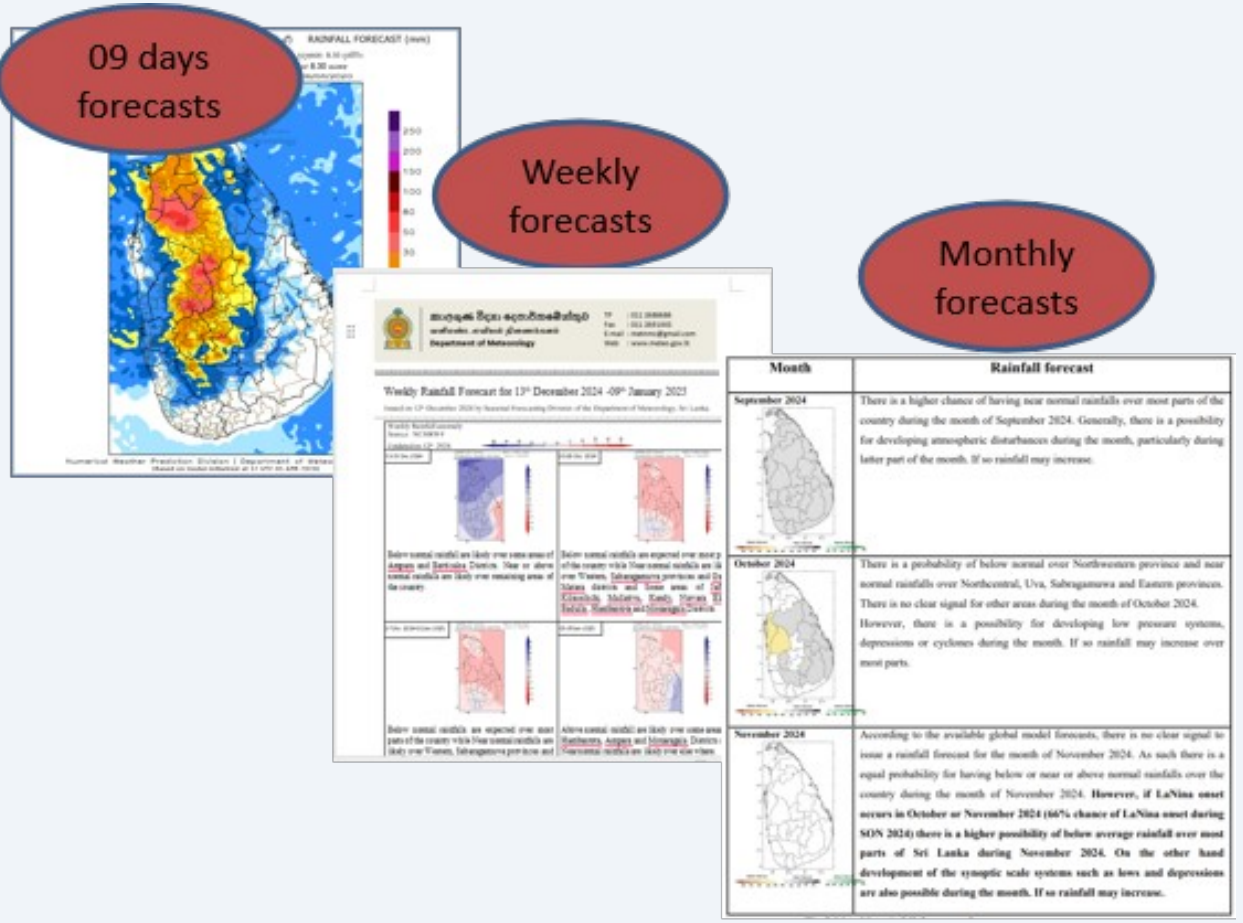
Rainfall forecast FOR JJA 2025 season



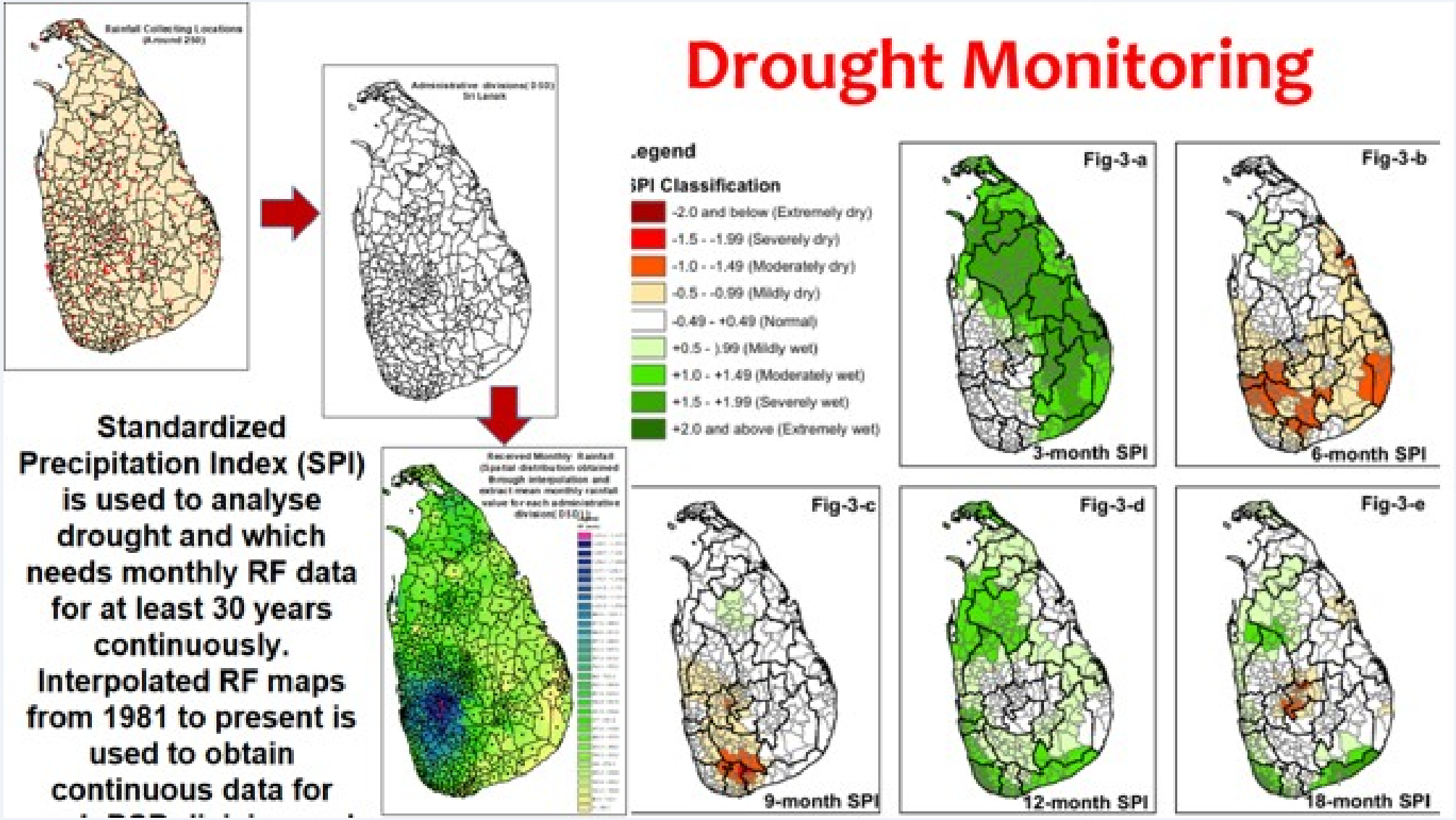
Sub-seasonal (S2S) Outlooks (10-day to 30-day)

Sub-seasonal (S2S) Outlooks (10-day to 30-day) fo
active/break spells

Monthly Climate Bulletins (observed vs. normal, ENSO/IOD status)

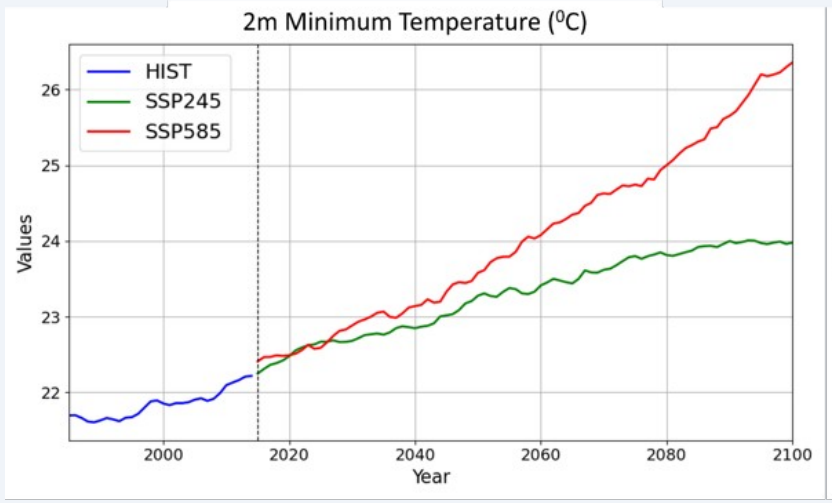


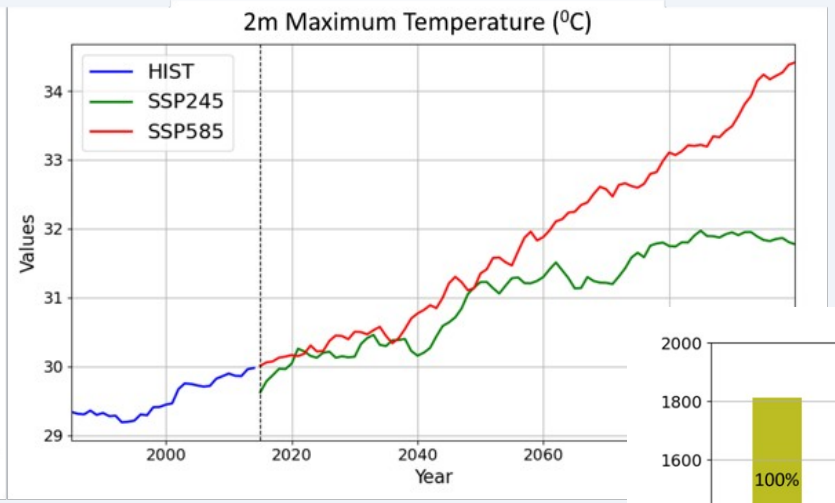
Extreme Event Monitoring –drought monitoring (by using SPI)

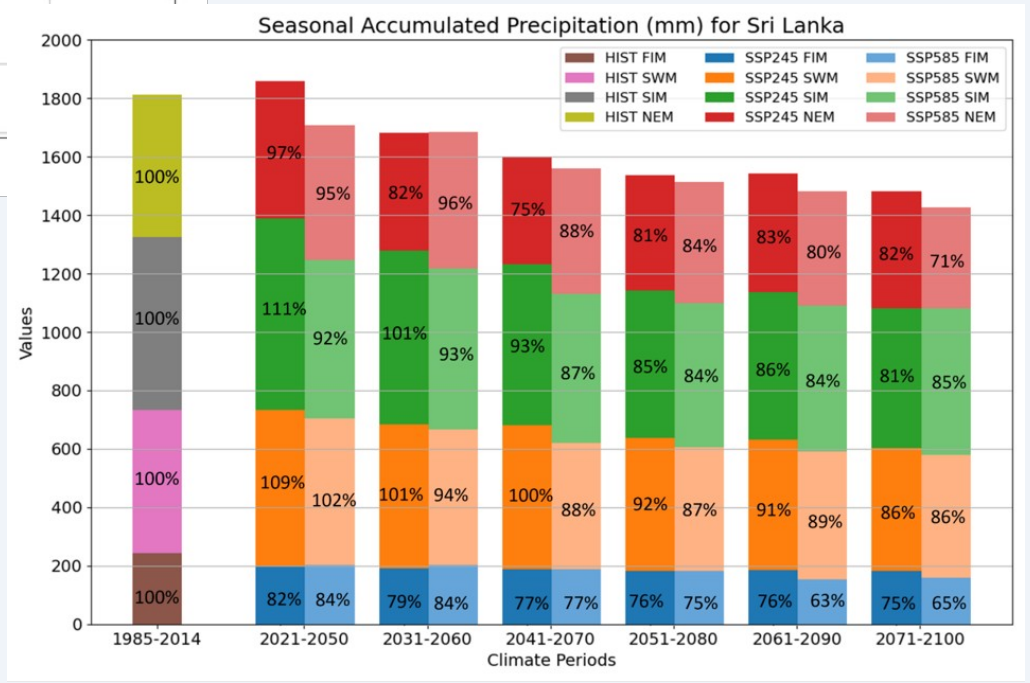


Long-term Projections (2030 / 2050 CMIP-6, CORDEX-SA downscales)

Dynamic climate Projections







Delivery Channels

Web dashboards (DoM portal, ANAWAKI app, Web GIS portal

Email bulletins and Forecasts

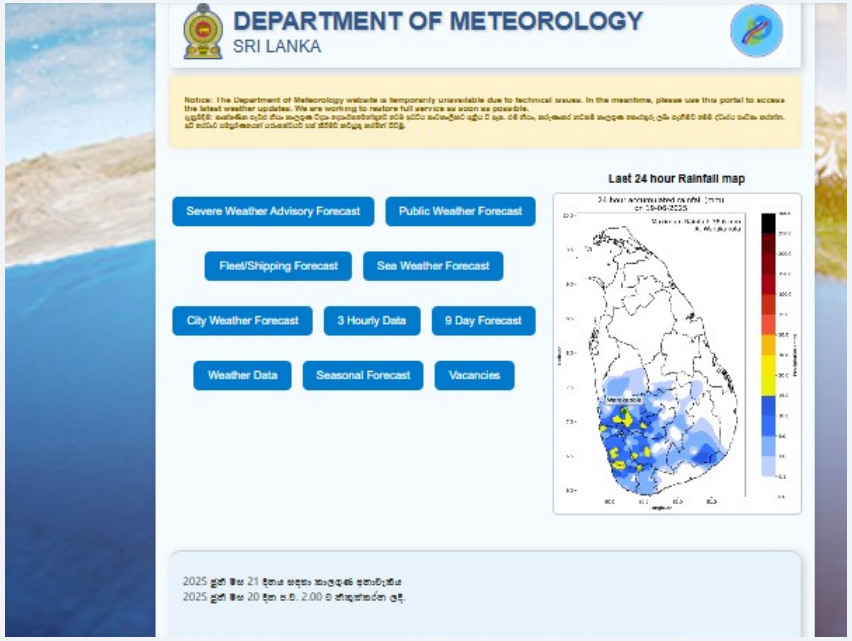
WhatsApp/Facebook groups _social media infographics for the public

Web:
www.meteo.gov.lk

Facebook:
SLMetDept

E mail:

Hotline:
011 2 686 686



Tailored Advisories

Agriculture: Crop-stage rainfall outlooks, soil-moisture anomalies, pest/disease risk maps

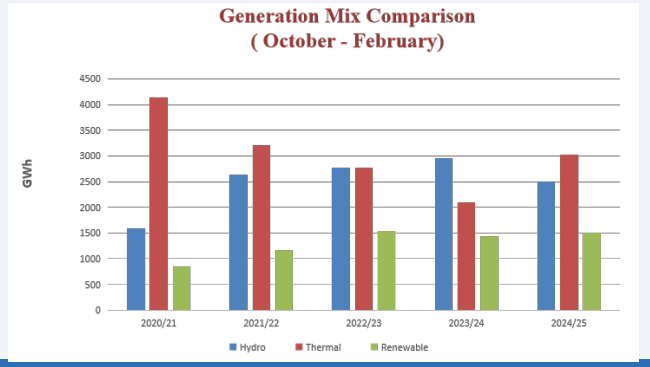
- Information were shared in seasonal planning meetings and kanna meetings
- Based on the seasonal weather outlook of DoM – Agro-met Advisories – issued - at the beginning of every month
- Information were delivered – in all three languages - through different means – with NAICC, DoA
- Through emails
- Through DoA web site/ DoA Facebook page
- 1920 direct information service

Water Resources: Basin-scale inflow forecasts, reservoir water management planing

Disaster Management: Flood inundation, landslide, cyclone strike probabilities

Health: Weekly dengue, heat-stress indices

Energy: Hydropower generation outlooks, solar power generation planning



Examples of application

Paddy Sowing Calendar Shift – Mahaweli zones adjusted planting by 2–3 weeks using DoM seasonal outlook

Pre-positioning Relief – DMC stockpiled water pumps & tents ahead of high-probability flood season

Reservoir Operation – CEB & Irrigation Dept. altered release schedules, saving ~8 % of water losses in 2024 dry spell

Heat-Health Action Plans – Ministry of Health issued early school-hour changes during April heat-weather

Food security projects– On going FAO projects in dry zone

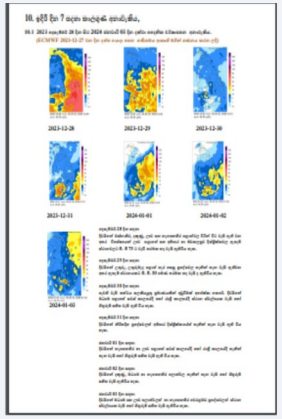
SECTORAL ADVISORIES AND APPLICATIONS

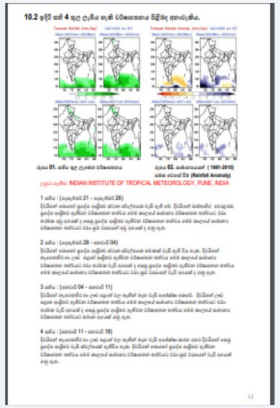
- Types of advisories issued (agriculture, water, health, etc.)
- Whether advisories are tailored to user needs or co-developed with sectors
- How forecasts are applied in planning or decision-making by government/sector agencies

Types of advisories issued

Agriculture:

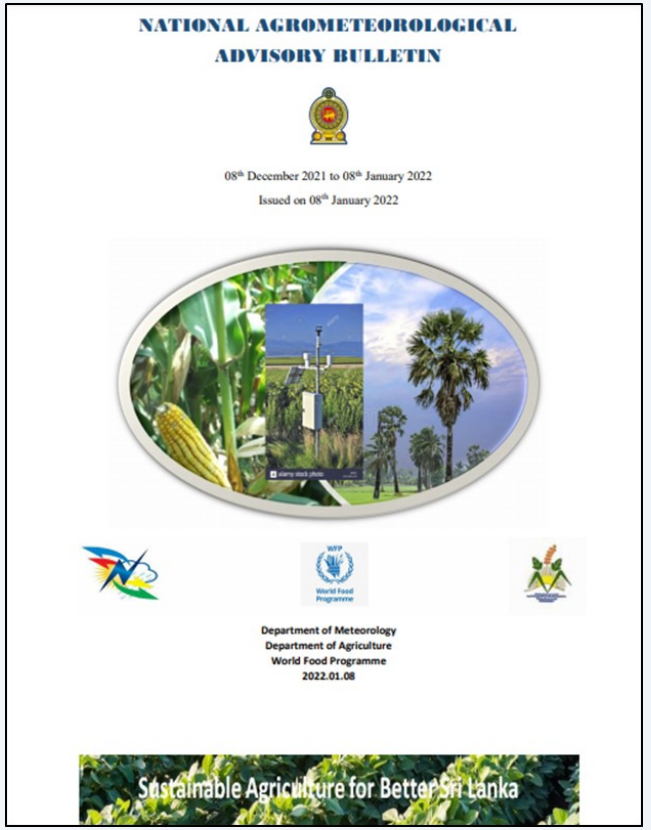
Weekly Agro met Bulletin



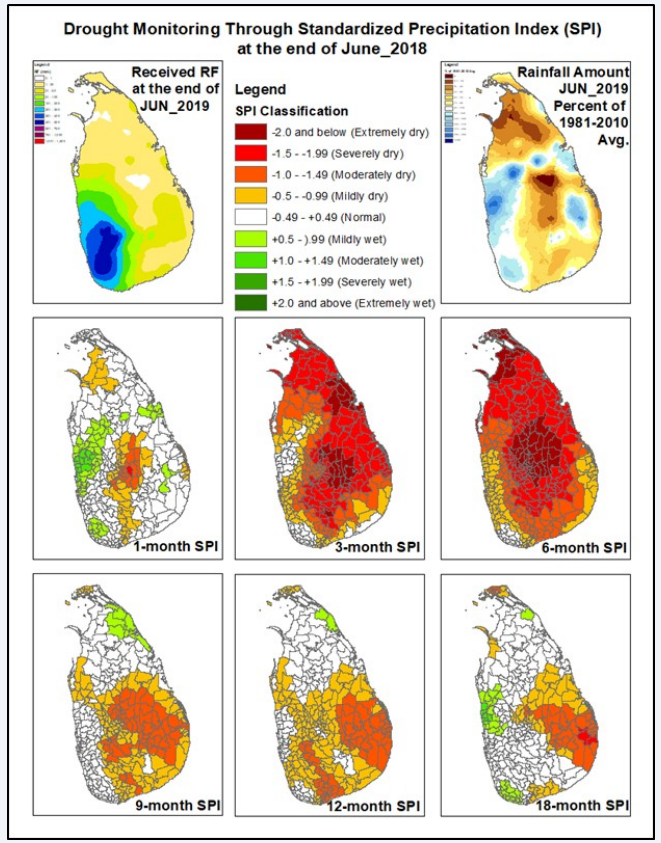


Crop calendar adjustments
Pest and disease risk alerts

Monthly Agro met bulletins

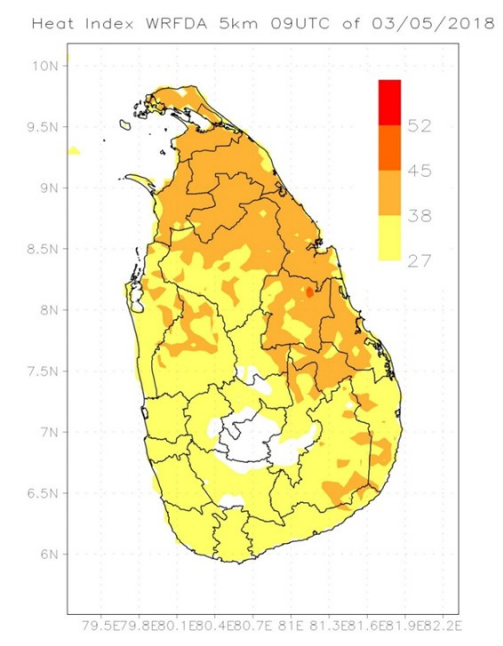


Drought Monitoring bulletins



Types of advisories issued…

Health:
Heat Weather Advisories and Warnings
DOM issued warm weather advisory for Sri Lanka cooperate with Ministry of Health



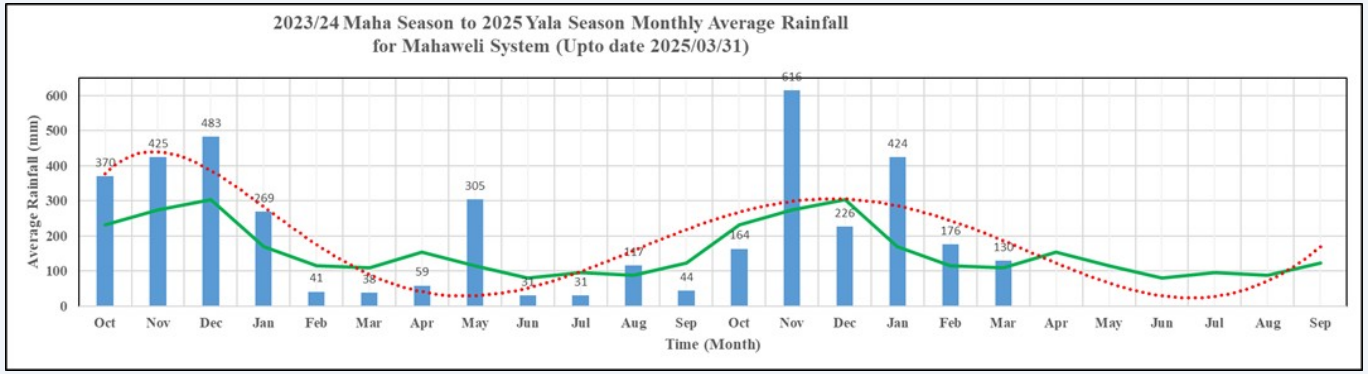
Heat Index	Level of warning	
27–38	Normal	
39–45	Caution	fatigue is possible with prolonged exposure and activity. Continuing activity could result in heat cramps.
46–52	Extreme Caution	heat cramps and heat exhaustion are possible. Continuing activity could result in heat stroke.
over 52	Danger	heat cramps and heat exhaustion are likely; heat stroke is probable with continued activity.

The Heat Index Forecast is calculated by using relative humidity and maximum temperature. It is generated by the DOM by using global numerical weather prediction model data.

Applications in Decision-Making

Water Resources: (contribute to the technical Water management committee)

Seasonal (Yala / maha)l water availability outlooks
Reservoir management guidance
Hydro Power Generation management guidance



Disaster Management:(Contribute)

Seasonal disaster preparedness plans

Health:

Dengue/malaria risk forecasts (in coordination with health ministry)

Planning Examples:

- Adjustments to paddy sowing dates in Mahaweli Zones
- DMC activates pre-positioning of resources based on seasonal forecasts
- Water Board adjusts release schedules from major reservoirs

Operational Use:

- Agriculture extension services relay guidance to farmers via SMS/field officers
- Climate-smart agriculture policies informed by seasonal trends
- Use in National Adaptation Planning (NAP) and local DRR strategies

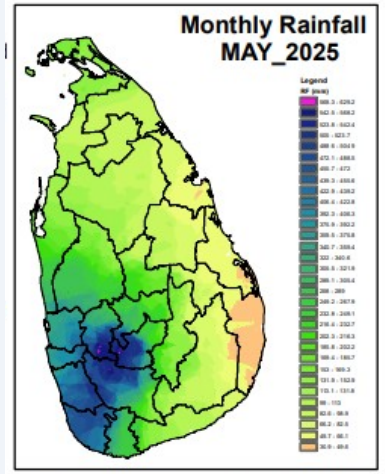


Fig 1 : Monthly accumulated rainfall

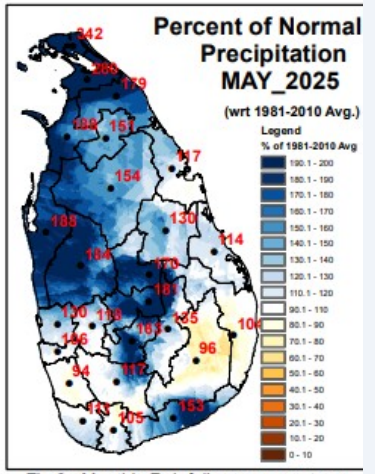


Fig 2 : Monthly Rainfall as a percentage from long-term average (1981-2010) map

TOOLS, PLATFORMS AND DATA USE

- National platforms/tools used for climate services (e.g., digital portals, DSSs, toolkits)
- Use of regional data sources like SASCOF, CORDEX products
- Integration of local observational or indigenous knowledge, if any

National platforms/tools used for climate services

DoM Online Climate Portal (PRISM- WFP) – interactive maps, Time-series & NetCDF downloads

Department web site

Disaster Information Mgmt. System (DMC) – risk layers, EW trigger thresholds

In-house toolkits: CPT, FOCUS, X-CAST, MULTI MODEL ensemble

Use of regional data sources like SASCOF, CORDEX products

SASCOF consensus outlooks – first-guess for national seasonal forecast

WMO GPCs model guidance

CORDEX-South Asia downscaled (0.22°) datasets for for preparation of Climate change projections

NEXNASA- CMIP6 data

APCC / NMME / SEAS-5 / ACCESS-S probabilistic hindcasts

Climate Prediction Center / NCEP/BOM/IRI-climate drivers outlook

Integration of local observational or indigenous knowledge

Co-production pipeline: Global ↔ regional ↔ national data blended with ground observations, validated in Monsoon Forums, then translated into sector-specific advisories.

Indigenous indicators and citizen data improve local relevance and build user trust

1. The height at which Weaver birds build their nests as an indicator of weather patterns and seasonal changes. Specifically, the nest height is believed to correlate with rainfall patterns and potential for flooding. Higher nests might indicate a higher risk of flooding, while lower nests might suggest a drier season.

It's believed that during periods of high rainfall or potential flooding,
the weaver birds might build their nests higher in trees
to protect them from rising water levels.
Conversely, during drier periods,
the birds might choose to build their nests lower,
closer to the ground, possibly due to a perceived lower risk of flooding.

2. Traditional farming practices in Sri Lanka, for example, incorporate observations of rainfall patterns, lunar cycles, and other natural phenomena to predict and manage agricultural activities. Farmers may use the abundance of wood apple flowers as a sign of good upcoming rain.

CAPACITY AND GAPS

- Technical or institutional capacities currently in place
- Key gaps or challenges (e.g., modeling capacity, user engagement, communication, funding)
- Areas where regional cooperation or training is needed

Technical & Institutional Capacities in Place

Department of Meteorology (DoM):

- Skilled meteorologists and Research officers trained in seasonal forecasting
- Operational use of CPT, FORCUS, XCAST, ECMWF, and other global models
- Expanding use of GIS and Python-based workflows

Institutional Coordination:

- Existing links with DMC, Dept. of Agriculture, Department of Irrigation and Ministry of Health
- Regular National Monsoon Forums and user meetings
- Development of sector-specific advisories (agriculture, water, DRR)

Key Gaps and Challenges

Technical Gaps:
- Limited local downscaling and impact-based modeling capacity
- Inadequate high-resolution gridded datasets
- Insufficient climate data infrastructure (e.g., archive systems, APIs)

User Engagement & Communication:
- Need for better interpretation of forecasts into user/sector-specific language
- Limited feedback mechanisms from end-users
- Underutilized potential for co-production with local-level planners

Funding & Sustainability:
- Projects often donor-driven and short-term
- Lack of core budget for operational climate services and training
- Limited staff capacity in regional offices

Areas for Regional Cooperation or Training Needs

Regional Needs:

- Training in dynamic/statistical downscaling and forecast interpretation
- Technical exchange on impact modeling (agriculture, water management, DRR)
- Tools for climate risk mapping and user-tailored product design
- Forecast Verification – evaluate skill and reliability of seasonal forecast
- Standard verification methods –
- Knowledge about data science

Collaboration Opportunities:

- Joint development of DSS tools with RIMES, SAARC, and Regional Climate Centers
- Shared seasonal forecast evaluation practices across South Asia
- Regional forum for capacity building in climate communication (SASCOF, SAHF…)

EXPECTATIONS FOR SAHF CS WG

- Key areas for collaboration through the CS WG (e.g., co-development, data sharing, capacity building)
- What support the country expects from the CS WG and partners
- Suggested priorities for inclusion in the regional work plan

Key Areas for Collaboration

Co-development of products – region-wide multi-model outlooks, impact maps (Agricultural-drought, flood risk, health indices)

Data-sharing framework – real-time exchange of sub-seasonal/seasonal outputs, bias-corrected grids

Joint capacity-building – workshops on AI/ML down-scaling, forecast verification, climate communication

Shared DSS toolkits (Python packages, dashboards)

Sri Lanka Expects from CS WG & Partners

Access to regional MME datasets in plug-and-play NetCDF format

Technical support for the development of impact-based forecast chains (crop yields, reservoir inflows)

Short-term staff exchange (on-the job training) with RCC/Leading NHMS

Suggested priorities for inclusion in the regional work plan

Regional Climate Data Portal with standardized APIs & metadata

Common verification protocol (scorecards, dashboards) for SASCOF member states

The support from forecast developers and sector professionals or regional experts to improve Seasonal forecast.

SOUTH ASIA HYDROMET FORUM

Regional Integrated Multi-Hazard Early Warning System
RIMES

CAREI SOUTH ASIA

THE WORLD BANK
I RD • IDA | WORLD BANK GROUP

UK International Development
Partnership | Progress | Prosperity

THANK YOU!