

Using Subseasonal to Seasonal Forecast Guidance to Support Famine Early Warning Systems Network International Food Security Assessments

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Outline

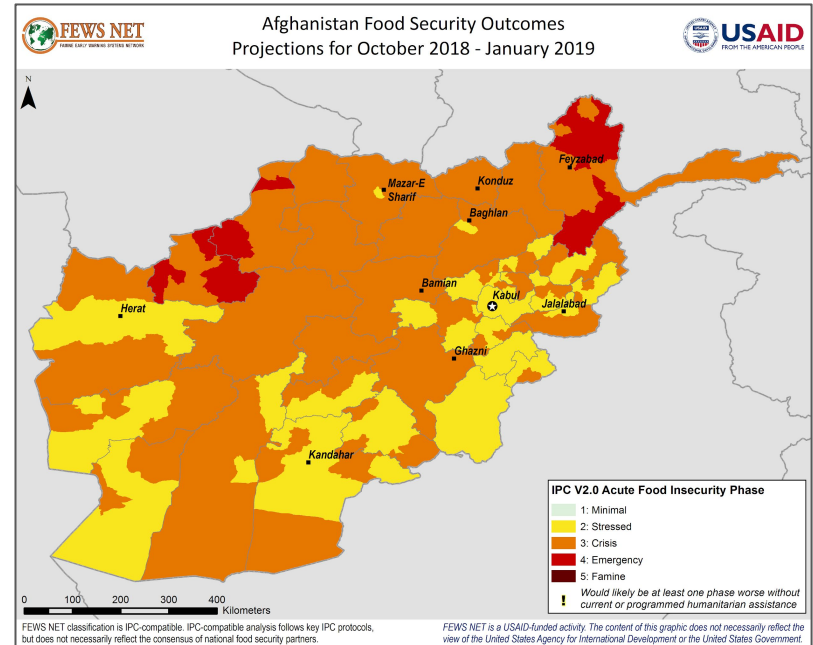
1. Famine Early Warning Systems Network (FEWS NET) Overview
2. FEWS NET Approach: Food Security Outlooks Using Scenarios
3. Scenario Development Aided By Weather and Climate Forecasts

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Famine Early Warning Systems Network (FEWS NET)

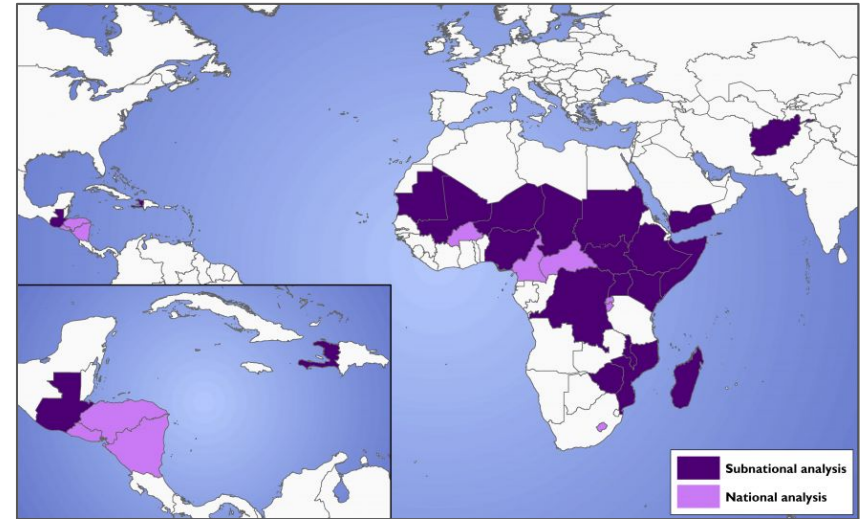
Provides objective, evidence-based analyses on acute food insecurity to help government decision-makers and relief agencies plan for and respond to humanitarian crises.



Source: <http://fews.net/fews-data/333>

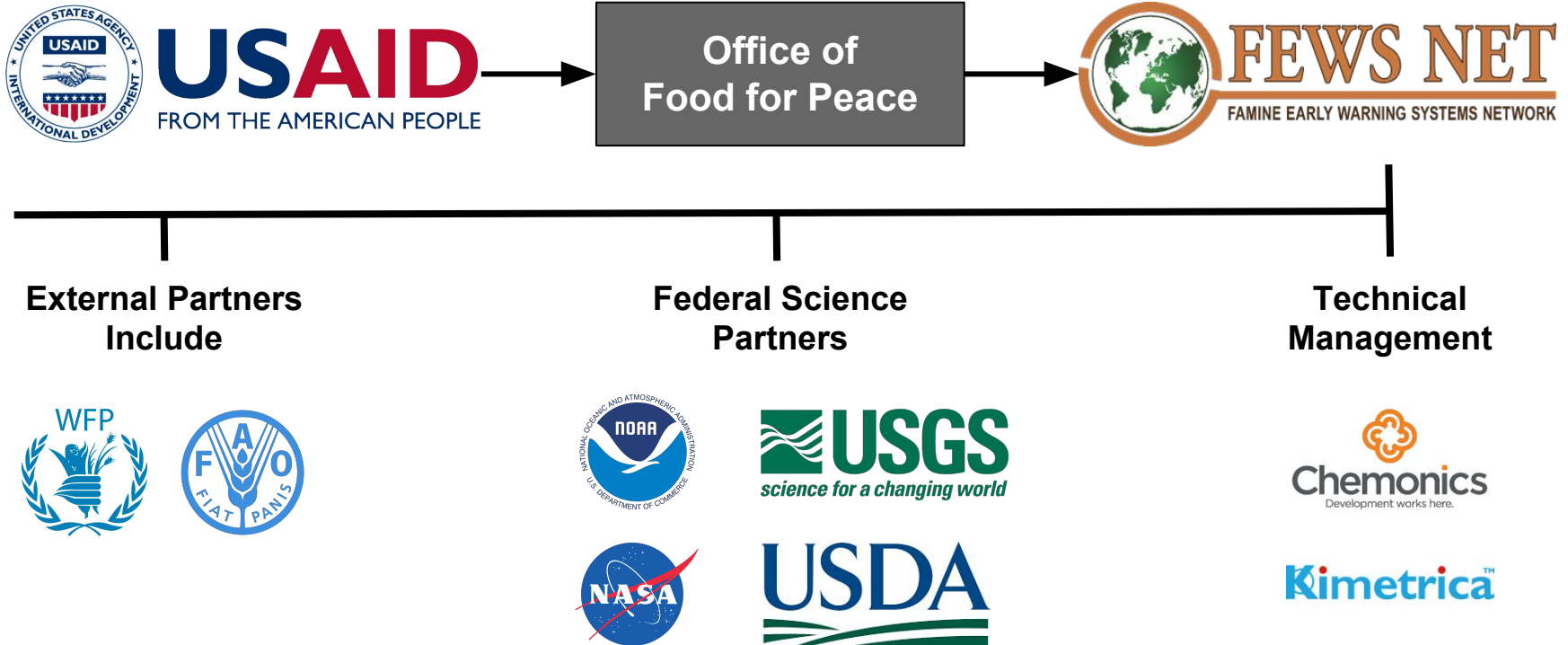
Famine Early Warning Systems Network (FEWS NET)

Analysts in 22 field offices work with U.S. government science agencies, national government ministries, international agencies, and NGOs to produce forward-looking reports for the world's most food-insecure countries.



Source: <http://fews.net/about-us>

FEWS NET Organizational Structure



Factors Influencing Access to Food

Environmental



Social



Governmental



Current
Conditions

Market Prices

Sanitation

Assistance

Subseasonal
Variability

Commodities
& Trade

Healthcare

Seasonal
Variability

Income

Morbidity

Political
Conflict

Decadal &
Multidecadal

Market
Structure

Consumption

Factors Influencing Access to Food

Environmental

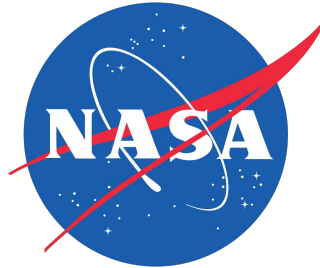
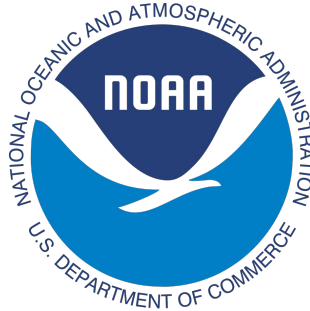


Current
Conditions

Subseasonal
Variability

Seasonal
Variability

Decadal &
Multidecadal



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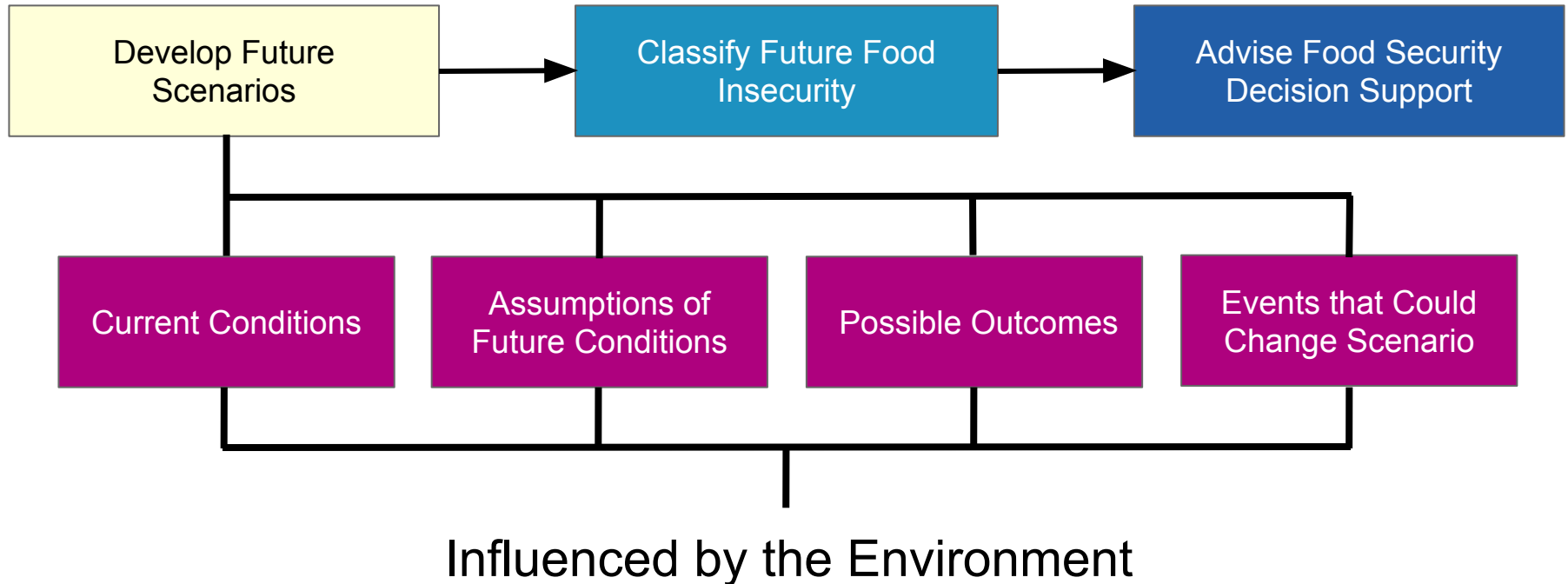
FEWS NET Approach

Food Security Decision Support Using Scenario Development

- It is impossible to forecast food insecurity with perfect accuracy
- FEWS NET uses a methodology known as scenario development to minimize uncertainty and increase the reliability of analyses
- Scenario development builds structure and logic into the outlook process and focuses attention on a subset of more likely outcomes

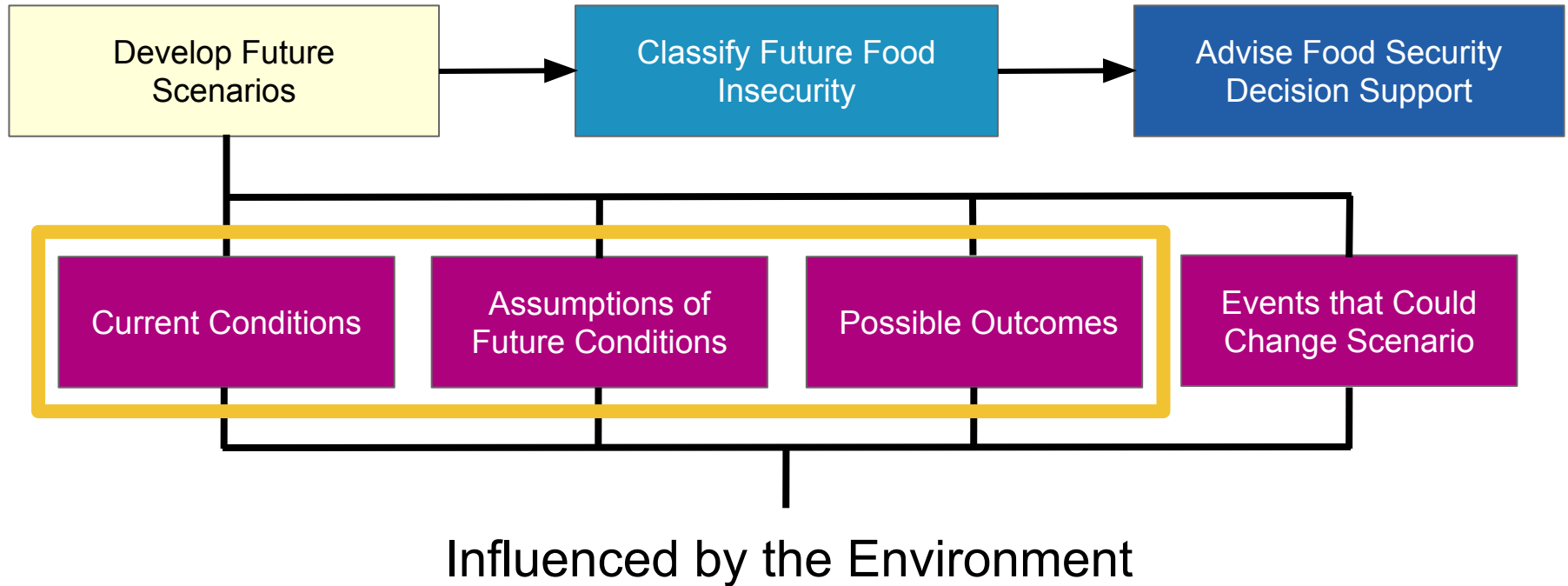
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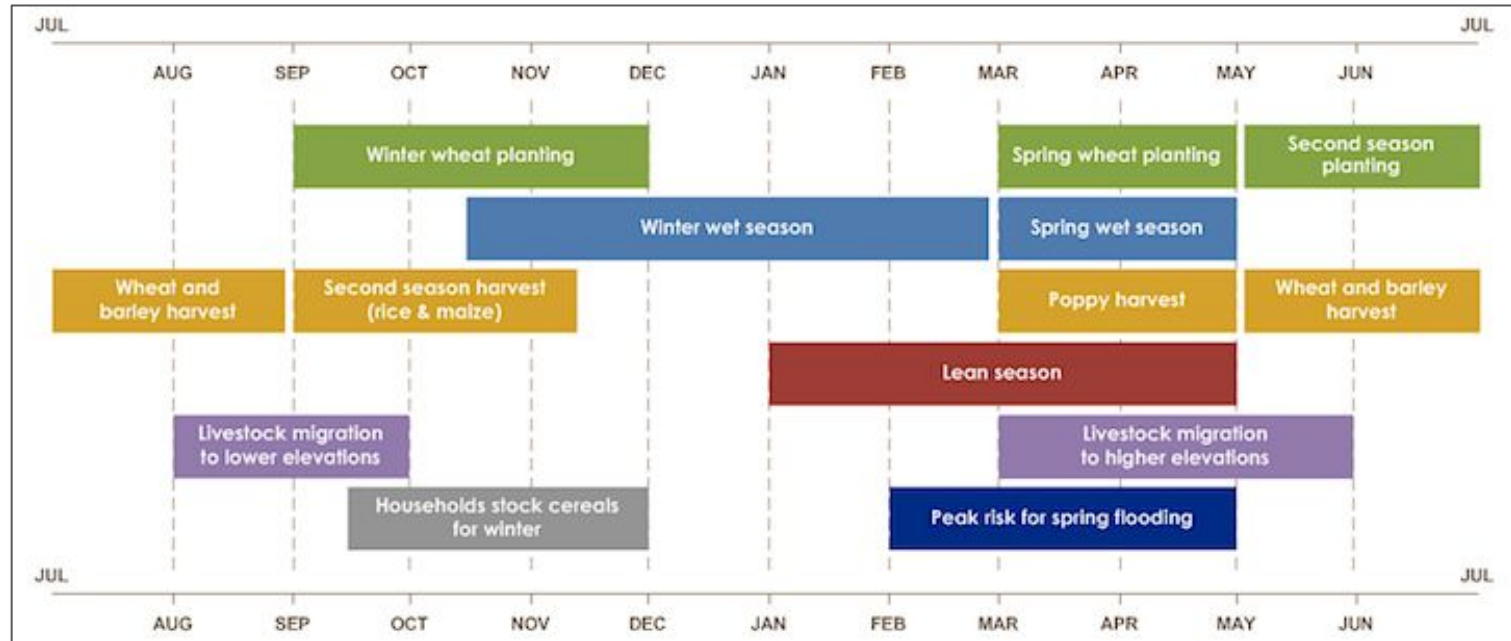
FEWS NET Approach

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Agro-Climatology Scenario Development Timeline

Dictated by precipitation & growing seasonal cycles



Afghanistan Seasonal Calendar

<http://fews.net/central-asia/afghanistan/seasonal-calendar/december-2013>

Agro-Climatology Scenario Development Timeline

Outlooks begin 8 months prior to target season

Time Horizon	Primary Tasks
6-8 Months Before Season	Recognize regional climatology and incorporate slow varying climate variability (e.g. decadal, multi-decadal and/or climate change)
3-5 Months Before Season	Incorporate seasonal to interannual climate modes relevant to region and current conditions (e.g. soil moisture)
Within 3 Months of Season	Incorporate initialized forecasts
During Season	Incorporate regional monitoring information

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Case Study: Afghanistan wintertime 2017-18 precipitation scenarios

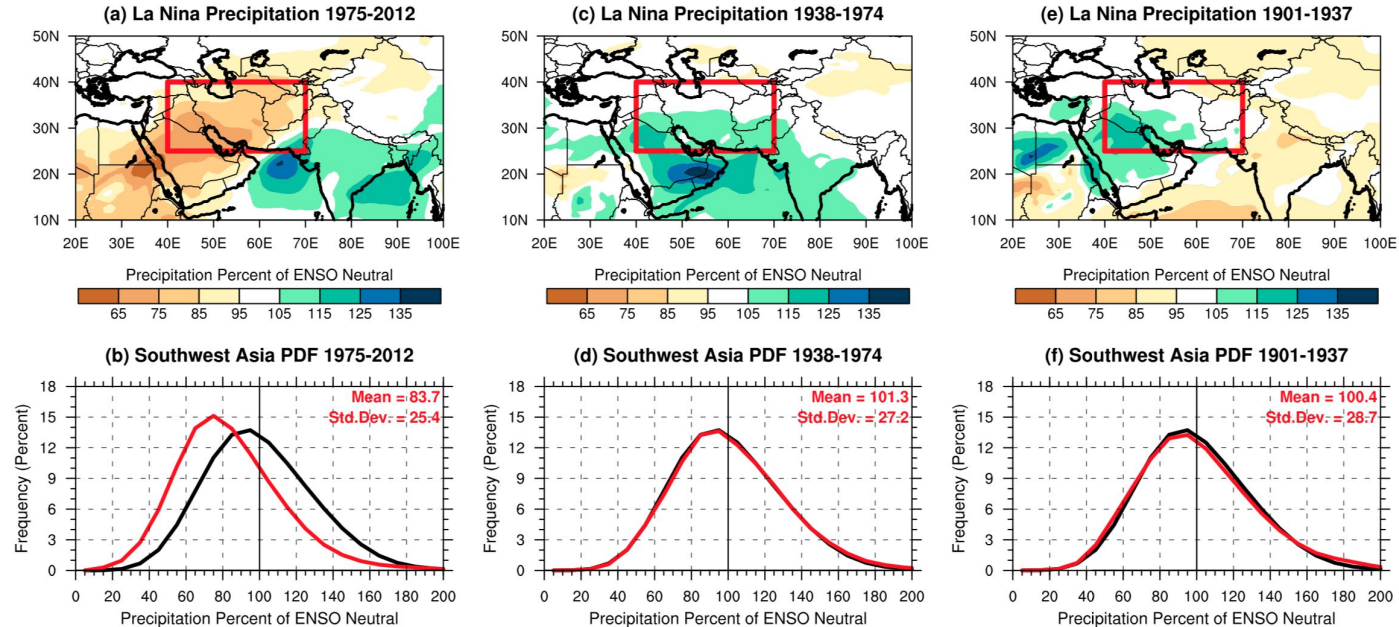
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6-8 Months Before Start of 2018 Rainy Season

La Niña events now have a heightened impact on Afghanistan



Hoell, A., M. Barlow, F. Cannon, and T. Xu, 2017: Oceanic Origins of Historical Southwest Asia Precipitation During the Boreal Cold Season. *J. Climate*, 30, 2885–2903.

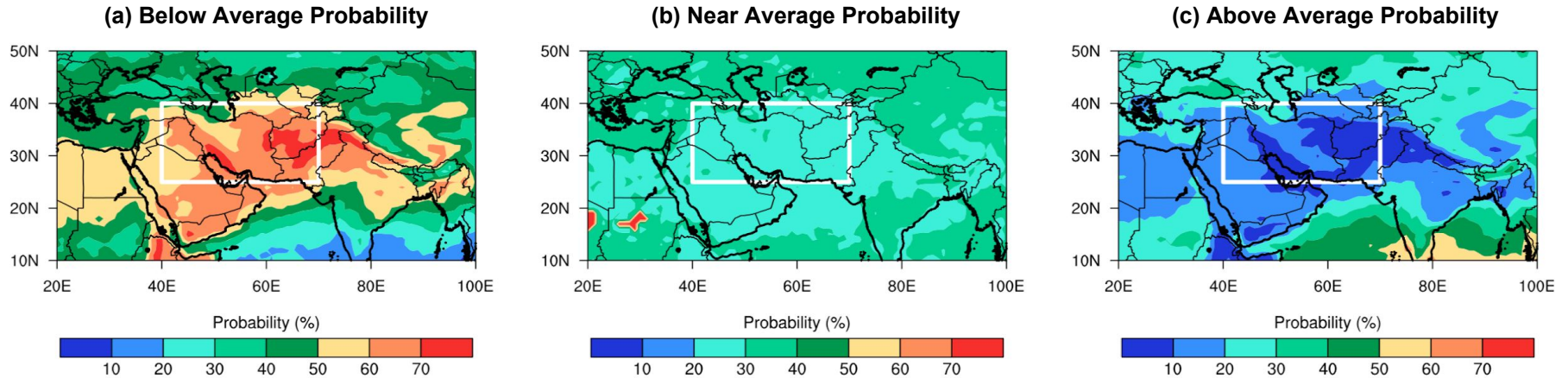
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3-5 Months Before Start of 2018 Rainy Season

Recent La Niña events result in a 60-70% probability of below average precipitation



Hoell, A., M. Barlow, T. Xu, and T. Zhang, 2018: Cold Season Southwest Asia Precipitation Sensitivity to El Niño–Southern Oscillation Events. *J. Climate*, 31, 4463–4482.

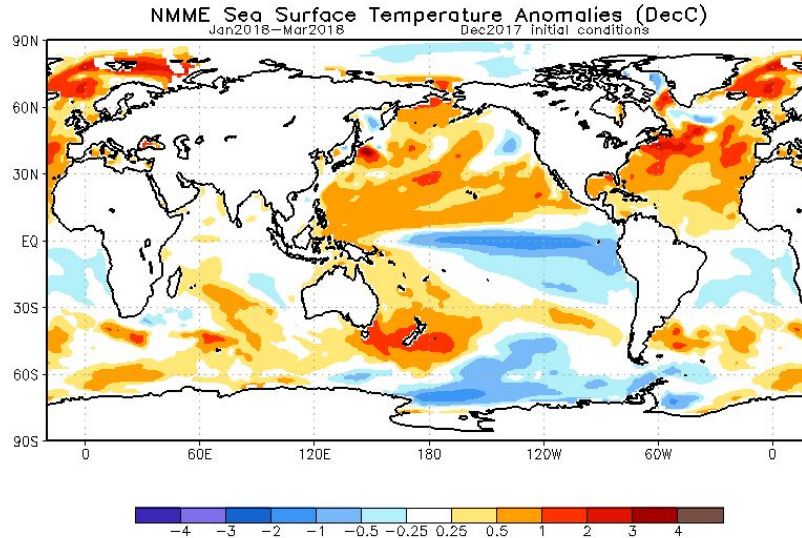
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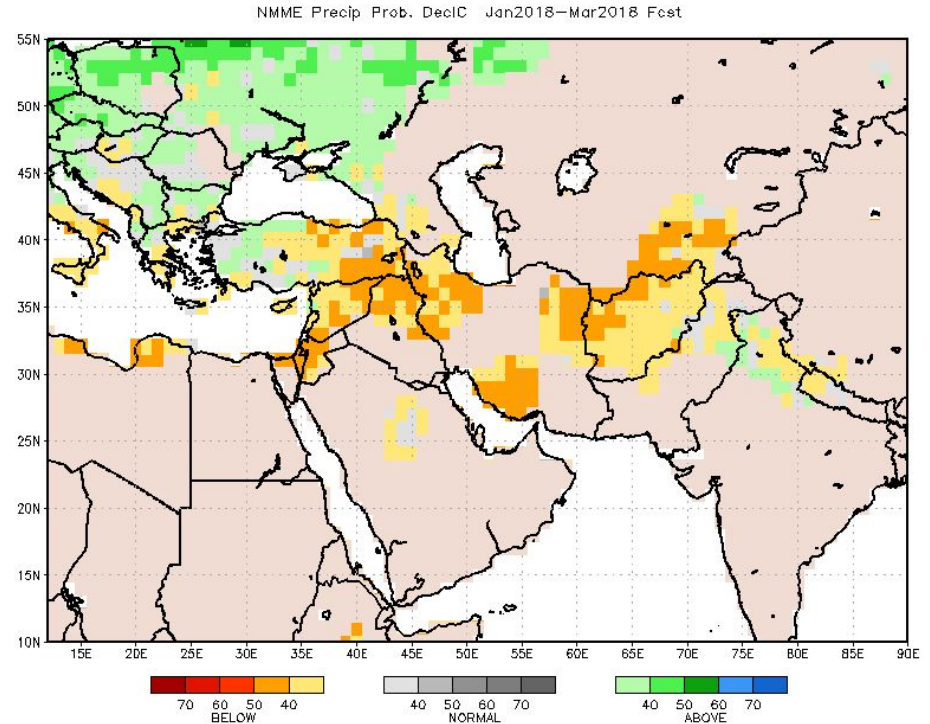
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Within 3 Months of the Start of 2018 Rainy Season

Forecast La Niña increases probability of low Afghanistan precipitation



NMME January-March 2018 forecasts
initialized in December 2017



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