Understanding El Niño: projecting impacts and implications on food security & livelihoods in Somalia

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• Seasonal rainfall outlook for the region
• El Niño in Somalia: Past vs. present
• Food security situation update and outlook
• Risks and opportunities
Seasonal rainfall outlook in the Horn of Africa
Climate drivers impacting East Africa weather: El Niño

El Niño vs. La Niña

Source: FEWS NET/USGS/NOAA
Climate drivers impacting East Africa weather: El Niño

MAP 1: Typical precipitation patterns under El Niño conditions (teleconnection)

Source: IRI, FAO-GIEWS
Climate drivers impacting East Africa weather: Indian Ocean Dipole (IOD)

IOD Index = **West** - **East**

<table>
<thead>
<tr>
<th>IOD</th>
<th>East Africa Impacts</th>
</tr>
</thead>
<tbody>
<tr>
<td>Positive</td>
<td>Above-average rainfall</td>
</tr>
<tr>
<td>Negative</td>
<td>Below-average rainfall</td>
</tr>
</tbody>
</table>

Source of graphic: FEWSNET/USGS/NOAA
Combined effects of El Niño and IOD for the October – December season

Source of graphics: Hameed 2018
“El Niño conditions are present and are expected to gradually strengthen into the Northern Hemisphere winter 2023-24.”

- CPC ENSO Update
Positive Indian Ocean Dipole forecast

Monthly sea surface temperature anomalies for IOD region

Source of graphics: Australian Government Bureau of Meteorology
Combined effects of El Niño and IOD for the October – December season

Source of graphics: Hameed 2018
Increased probability of above-average rains between October and December
El Niño in Somalia: Past vs Present:
Temperature and Precipitation, and their combination, are the two defining parameters for the growth of natural resources including agriculture produce and rangeland vegetation, sustaining this agro-pastoral society.

**Climate of Somalia: Gu and Deyr**

- **GU season**: Hot & Humid
- **DEYR season**: Cold & Humid

Source: [http://faoswalim.org/resources/somalia_atlas/index.html](http://faoswalim.org/resources/somalia_atlas/index.html)

From: [https://fews.net/east-africa/somalia](https://fews.net/east-africa/somalia)
Somalia seasonal calendar

Source: https://fews.net/east-africa/somalia  https://www.icpacc.net/weekly-forecast/
El Niño trend analysis

There have been at least 30 El Niño events since 1900, with the 1982–83, 1997–98 and 2014–16 events among the strongest on record.
Projected long term scenarios for seasonal change 2020-2085

Low emission scenario
RCP 2.6

Intermediate emission scenario RCP 4.5

High emission scenario RCP 8.5

El Nino Somalia: Food security situation update and outlook
Rising level of needs, exacerbated by increasing frequency of shocks, rising population, continuing displacement and unmet needs (humanitarian and recovery/development needs)

El Nino likely to exacerbate the extended humanitarian impact of a multi-season drought
El Niño likely to exacerbate the extended humanitarian impact of a multi-season drought

Disease outbreak due to contaminated and stagnant water could also occur, with likely exacerbating impact on acute malnutrition
- Protracted humanitarian crisis
El Niño likely to cause riverine and flash floods, leading to loss of lives, property, population displacement, destruction of infrastructure and crops in the field.

Impact likely to be greatest in riverine livelihoods (along Shabelle and Juba rivers). However, flash floods in other (low-lying) areas receiving above average rainfall are also likely.

Not all El Niño years necessarily lead to flooding. However, severe flooding has been observed in several El Niño contingency planning can be based on historical data on reported impacts.

### # of People Affected

<table>
<thead>
<tr>
<th>Year</th>
<th>Flood</th>
<th>Cyclone/Storm</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>2000</td>
<td>373,500</td>
<td></td>
<td>373,500</td>
</tr>
<tr>
<td>2001</td>
<td>6,500</td>
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<tr>
<td>2002</td>
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<tr>
<td>2003</td>
<td>300</td>
<td></td>
<td>300</td>
</tr>
<tr>
<td>2004</td>
<td>1,500</td>
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<td>1,500</td>
</tr>
<tr>
<td>2005</td>
<td>7,520</td>
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<tr>
<td>2006</td>
<td>486,500</td>
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<td>2007</td>
<td>10,012</td>
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<td>2008</td>
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<tr>
<td>2009</td>
<td>1,750</td>
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<tr>
<td>2010</td>
<td>16,200</td>
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</tr>
<tr>
<td>2011</td>
<td>2,800</td>
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<tr>
<td>2012</td>
<td>32,200</td>
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<td>32,200</td>
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<tr>
<td>2013</td>
<td>105,000</td>
<td>142,380</td>
<td>247,380</td>
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<tr>
<td>2014</td>
<td>90,000</td>
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<td>90,000</td>
</tr>
<tr>
<td>2015</td>
<td>916,296</td>
<td>4,000</td>
<td>920,296</td>
</tr>
<tr>
<td>2016</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2018</td>
<td>700,000</td>
<td>228,000</td>
<td>928,000</td>
</tr>
<tr>
<td>2019</td>
<td>500,000</td>
<td>30,000</td>
<td>530,000</td>
</tr>
<tr>
<td>2020</td>
<td>1,191,020</td>
<td>120,000</td>
<td>1,311,020</td>
</tr>
<tr>
<td>2021</td>
<td>400,000</td>
<td></td>
<td>400,000</td>
</tr>
<tr>
<td>2022</td>
<td>4,416</td>
<td></td>
<td>4,416</td>
</tr>
</tbody>
</table>

Notes:

1/ El Niño Years are highlighted in red text
2/ Non-El Niño years with over 100,000 people affected are highlighted in yellow.
2023 Gu Season Rainfall Performance

1 Mar-30 Jun 2023 Rainfall Anomaly (MM)

Mar 2023 Rainfall Anomaly (MM)

Apr 2023 Rainfall Anomaly (MM)

May 2023 Rainfall Anomaly

Jun 2023 Rainfall Anomaly (MM)
Percent of Mean NDVI/Vegetation Cover
21-30 Jun 2023
Shabelle and Juba River Levels

Historical data for Station Dollow on Juba River

Historical data for Station Bardheere on Juba River

Historical data for Station Belet Weyne on Shabelle River

Historical data for Station Jawhar on Shabelle River
Risks and opportunities
EL NINO: RISK OR OPPORTUNITY?

RISKS
- Floods
- GBV
- Displacement
- Loss of livelihoods
- Food insecurity
- Disease outbreak
- Land degradation
- Property damage
- Feed contamination
- Soil erosion

LOSS OF LIFE

OPPORTUNITIES
- Better production
- Above-average rainfall
- Water harvesting
- Increased income
- Increased food availability
- Groundwater recharge
- Increased fodder
- Accelerate drought recovery
- Better body condition

LIKELIHOOD

Very Likely
Likely
Unlikely
Likely
Very Likely

IMPACT
Greater
Lesser
**Scenario planning**

**IMPACT**

**Catastrophic**
- Extensive flooding with deep floodwater (above 3 m)
- Losses of human lives and livestock
- Co-occurrence of riverine and flash flood
- Destruction of crops, buildings, road networks and other assets
- Disruption of commercial supplies for weeks
- Permanence of floodwaters for weeks/months
- Evacuation of hundreds of thousands of people
- Waterborne diseases

**Large-scale humanitarian crisis**
- Flooding of large swathes of farmlands and urban areas with flood water of 2-3m depth
- Permanence of floodwaters for weeks
- Co-occurrence of riverine and flash flood
- Damage to crops, buildings, road networks and assets
- Disruption of commercial supplies
- Waterborne diseases
- Evacuation of large numbers of people

**Heavy damage to livelihoods & assets**
- Flooding of large swathes of farmlands and urban areas with floodwater of 1-2m depth
- Damage to crops, buildings and assets
- Flood waters remain for a few weeks
- Likely risk of waterborne disease

**Substantial stress on livelihoods**
- Flooding of large swathes of farmlands and urban areas
- Limited damage to crops, buildings and assets
- Flood water remains for a few days
- Risk of waterborne disease

**MITIGATION**

**Longer term (large-scale)**
- Retrofitting existing infrastructures (roads, bridges, public buildings)
- Implement Nature Based Solutions on slopes
- Enhanced diversity of flood defence infrastructures with, for example, cascading dykes, weirs, off-stream reservoirs, informed by water balances including environmental flows
- Flood defence infrastructures with cascading dykes, weirs, off-stream reservoirs
- Water harvesting structures (and Managed Aquifer Recharge)
- Improved Land planning

**Short term (small scale)**
- EWS and Emergency Response Plan
- Evacuation plans
- Flood Management Plans
- Identification or creation of large safe grounds for prolonged permanence of people
- Repair existing infrastructure to slow floodwater
- Prepositioning of stocks of food, water and NFI
- Flood defence infrastructures
Likely impacts in the absence of intervention

### IMPACT MEASUREMENT

Likely scenarios without intervention

<table>
<thead>
<tr>
<th>IMPACT</th>
<th>10yr</th>
<th>50yr</th>
<th>100yr</th>
<th>1000yr</th>
</tr>
</thead>
<tbody>
<tr>
<td>Flood water levels &amp; time to subside</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Damage to property &amp; assets</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Loss of life</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Displacement</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Loss of livelihoods</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Likelihood of waterborne disease outbreak</td>
<td></td>
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</tr>
</tbody>
</table>
**WHY EARLY ACTION?**

**Without Early Action**
- Without early action ahead of Deyr 2023 and a high likelihood of a 100 yr flood event loss of lives & livelihoods will be high with a growing humanitarian caseload

**With Early Action**
- Investment in EW & preparedness ahead of Deyr 2023 will save lives & livelihoods and lower the cost of the humanitarian response

**IMMEDIATE PRIORITY ACTIONS**
- Flood defence infrastructures to slow flood waters & give people more time
- Set up robust EW systems and emergency response plans
- Flood management planning with local & national authorities
- Coordinate with all actors to enact safe evac points based on available data set up for prolonged presence
- Continuous monitoring of river levels
- Repair existing infrastructure to slow flood water
- Prepositioning of stocks of food, water and NFI

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**LOSS OF LIFE**
- We can substantially mitigate loss of human life by alerting people in time with reliable information & slowing flood waters

**LOSS OF LIVELIHOODS**
- We can partially prevent loss of livelihoods & productive asset by telling people when and where to move with their animals, when to plant & when not to

**DISPLACEMENT**
- Displacement will be a key coping strategy but access to information on safe evacuation points & higher ground is critical
THANK YOU