

# Flash Drought Tools: Advantages and Disadvantages by Indicator Type



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**Note:** There is no single best flash drought indicator or product; each approach provides different and often complementary information. Also, different regions and conditions require different approaches. This table provides some general suggestions on how to consider using each type of indicator.

|   | Primary Indicator          | Advantages   | Disadvantages  |
|---|----------------------------|--|--|
| 1 | Evapotranspiration Focused | <ul style="list-style-type: none"> <li>• Importance of high evaporative demand for flash drought</li> <li>• Benefits from relatively long climatology</li> <li>• Global scale</li> <li>• Potential for high spatial resolution</li> </ul>  | <ul style="list-style-type: none"> <li>• Often dependent on some model information</li> <li>• Not explicitly tied to precipitation; variable connection to soil moisture</li> <li>• Variable cool season performance</li> </ul>  |
| 2 | Precipitation Focused      | <ul style="list-style-type: none"> <li>• Precipitation is a necessary component of flash drought</li> <li>• Benefits from long climatology</li> <li>• National to global scale</li> <li>• Potential for high spatial resolution</li> <li>• Multiple forms of information – good for calibration/validation</li> <li>• Legacy of precipitation-based drought knowledge</li> </ul> | <ul style="list-style-type: none"> <li>• Not tied to evaporative demand, which is particularly important for flash drought</li> <li>• Highly variable quality/quantity by country</li> <li>• Timescale mismatch (e.g., 30-day totals vs. sub-monthly flash drought onset)</li> </ul>               |
| 3 | Soil Moisture Focused      | <ul style="list-style-type: none"> <li>• Soil moisture indicative of agricultural and ecological impacts</li> <li>• Integrates the effects of precipitation &amp; evaporative demand</li> <li>• National to global scale</li> <li>• Low “false alarm” rate</li> </ul>  | <ul style="list-style-type: none"> <li>• Highly variable <i>in situ</i> monitoring infrastructure, so reliance on models + remote sensing</li> <li>• Variable climatology, often very short</li> <li>• Spatial variability and representativeness</li> <li>• Communication complexities</li> </ul> |
| 4 | Integrated Products        | <ul style="list-style-type: none"> <li>• Can leverage the advantages of individual variables</li> <li>• Potential to depict non-linear relationships</li> <li>• Confluence of evidence approaches can make for a more stable result</li> </ul>   | <ul style="list-style-type: none"> <li>• May not respond as quickly as other drought products</li> <li>• Communication and interpretation can be difficult</li> </ul>  |