

When Showers Don't Bring Flowers...

John Dyer, Challenger Middle School, Glendale, AZ, Earth Camp for Educators 2013



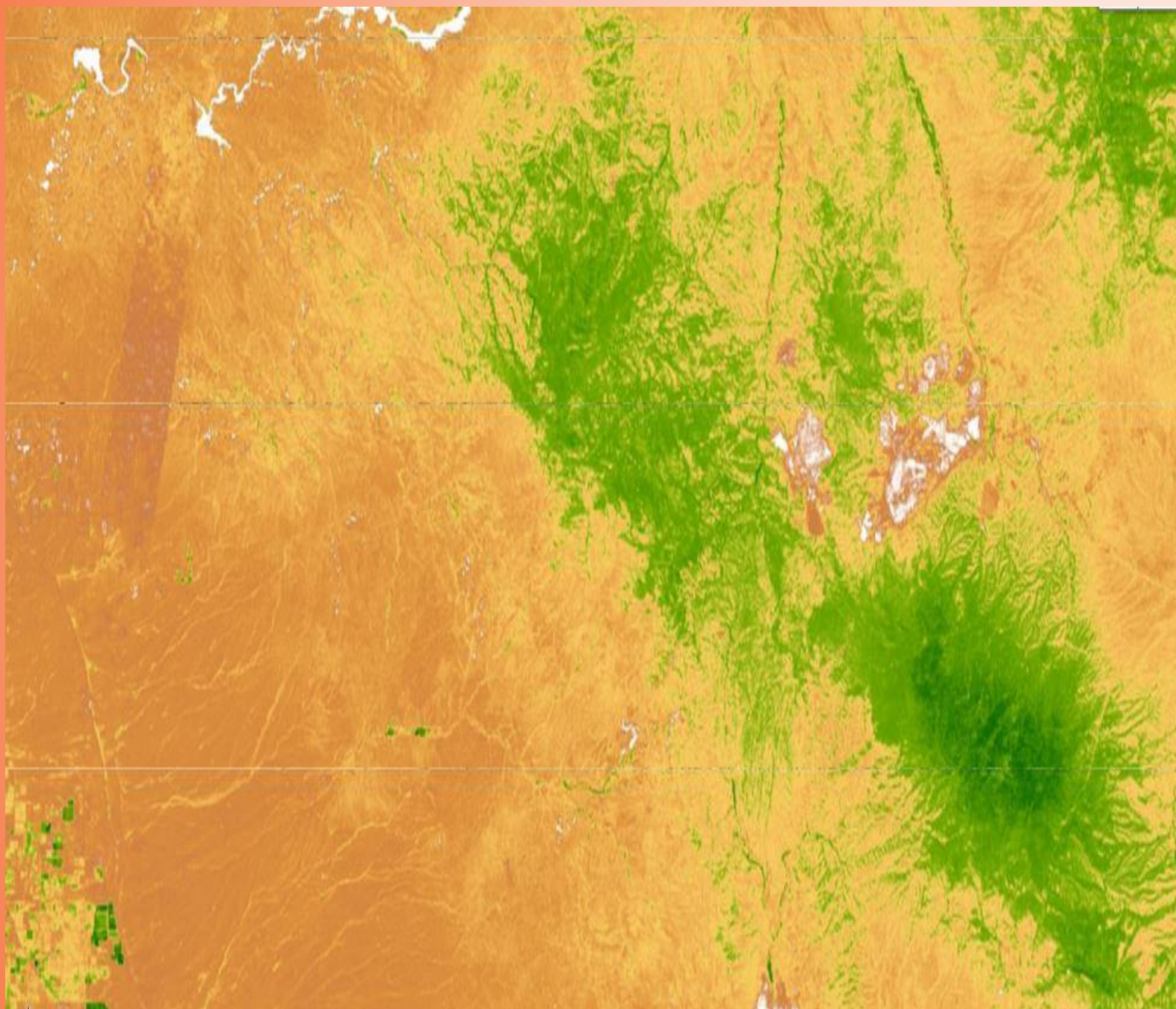
The Power of Perspective

Artist's view of a U.S. Landsat satellite. Credits: NASA.

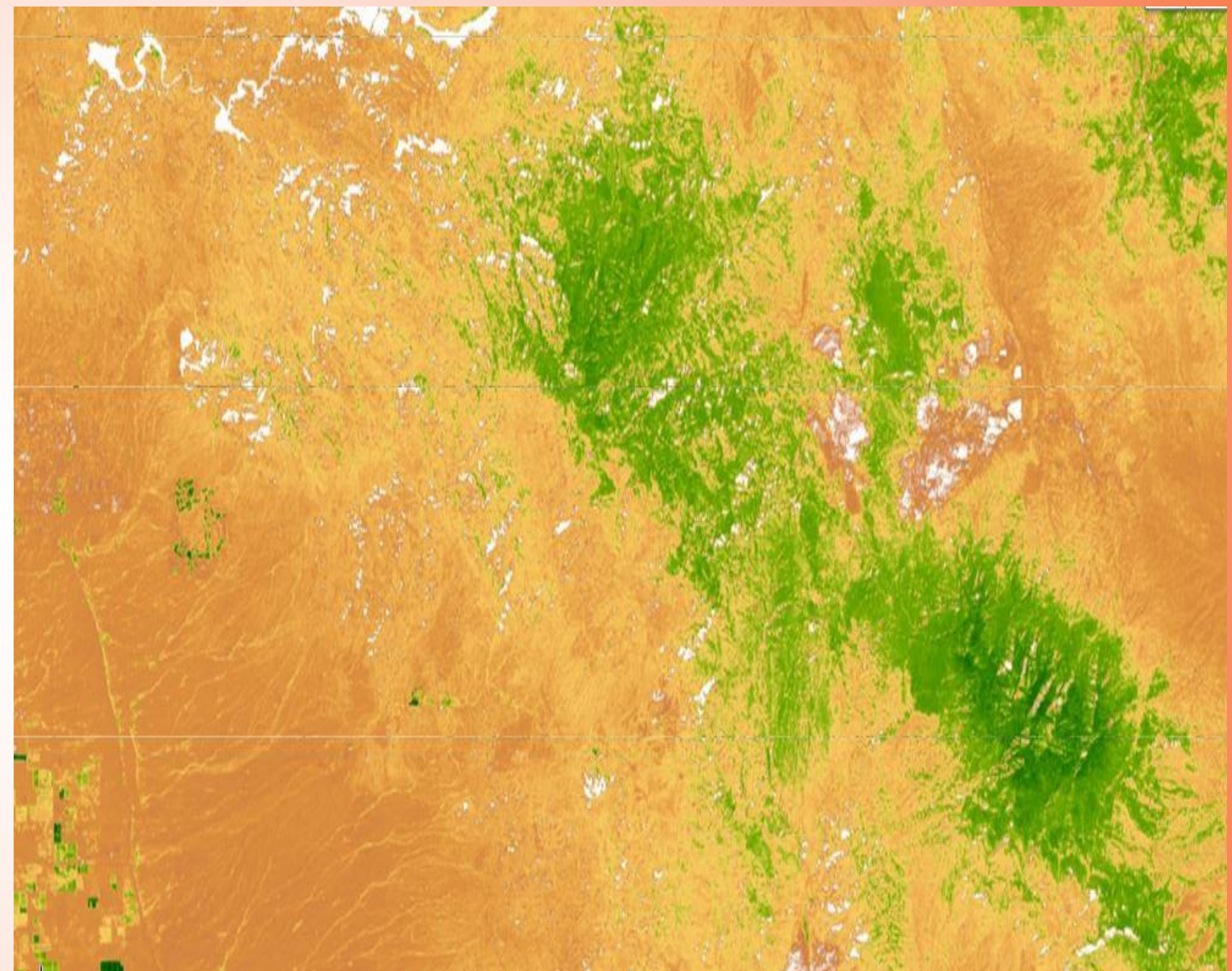
When considering the lilies of the field it's easy to think "They just happen..."

But in reality, the two most important variables in wildflower production are water and temperature, and relatively small variations in either can have an enormous impact on germination and maturation. This can have effects lasting much longer than just the current season. Wildflowers are much more than a seasonal visual delight; they provide and influence annual food/water needs, shelter, reproduction media, and delineate and illuminate migration corridors, for a myriad of endemic and migratory animal species, and even contribute to the local economy through tourism dollars.

Landsat NDVI courtesy of Google Earth Engine's Trusted Tester Program



Superstition Mountains and surrounding area - Wet year, 1989, Vegetation shows green.



Same area, dryer/warmer year, 1996, - vegetation shows green, though much less of it.



Wildflowers in Superstition Mountains, productive, and less productive seasons; notice difference in coverage, and diversity...



Often, wildflowers flourish on substrates that are thin soils covered by "desert pavement" - wind scoured rocks and pebbles, that provide places for seeds to lodge and be protected awaiting germination. These surfaces draw up and keep moisture trapped. Unfortunately though, radiant heat absorbed by the rocks can increase the soil temperature and evaporation rate if plant cover does not shade the surface as seasonal photoperiod increases.

Two detrimental events for wildflowers are insufficient precipitation to sustain a plant after germination, and temperature spikes, both result in seeds sprouting, but plant failure prior to maturity; failing to produce viable seeds themselves. When either occurs for a few years in succession, the range, density, and diversity of wildflower populations diminish, and the resulting negative impacts on dependent animal species can take decades to mitigate or recover.

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