

# Soils for Food Security and Climate in Eurasia

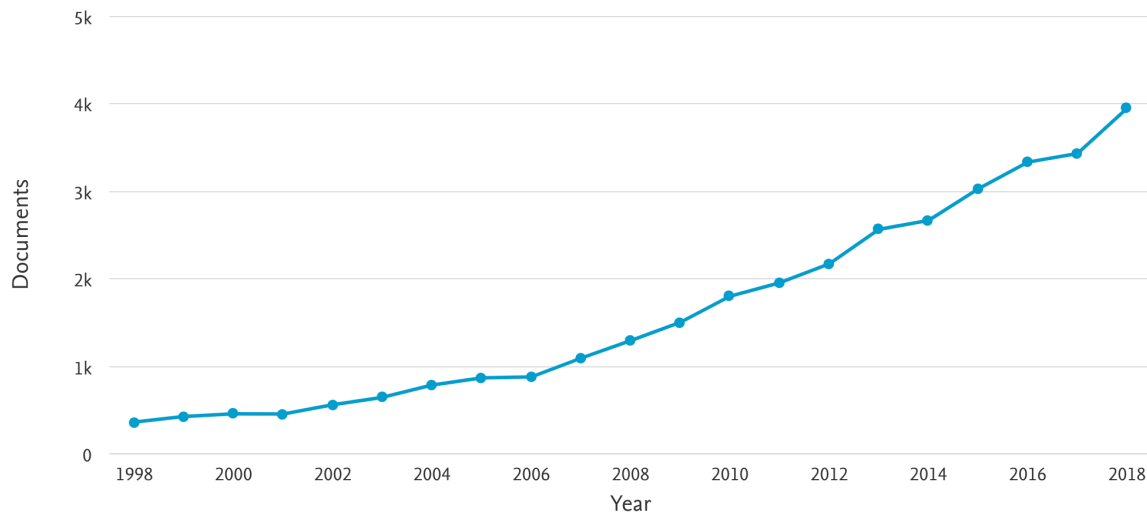
Anna Buyvolova

Sochi, December 6, 2019

# Outline

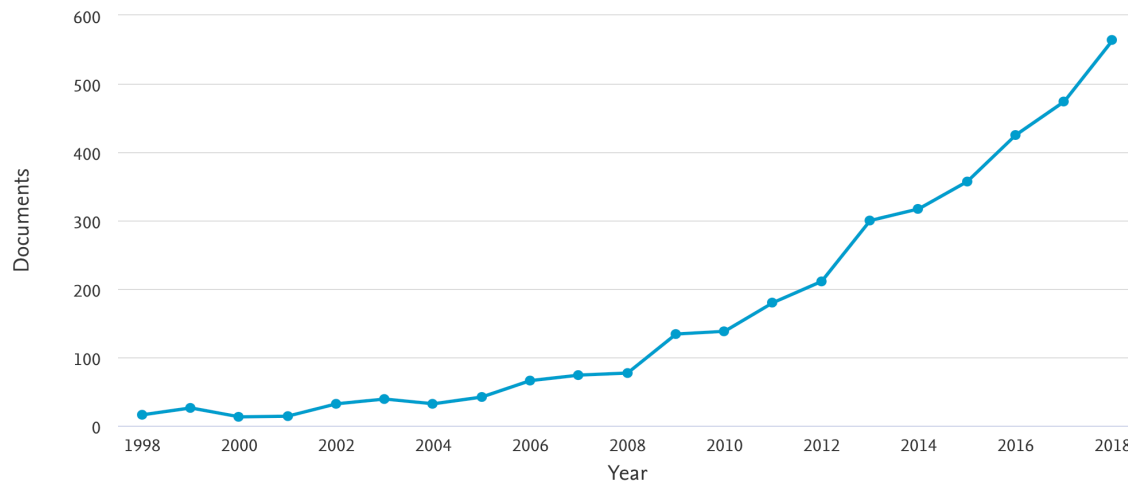
- What issues dominate in literature on soils, food security and climate change?
- What is the extent of importance of food security, climate in scientific literature in the Eurasian region?
- What are some current examples of practical application of soil science?

# Global trends in publication on soil, climate change and food security



Keywords: climate change, soil

Global publication activity sharply increase in the last 30 years

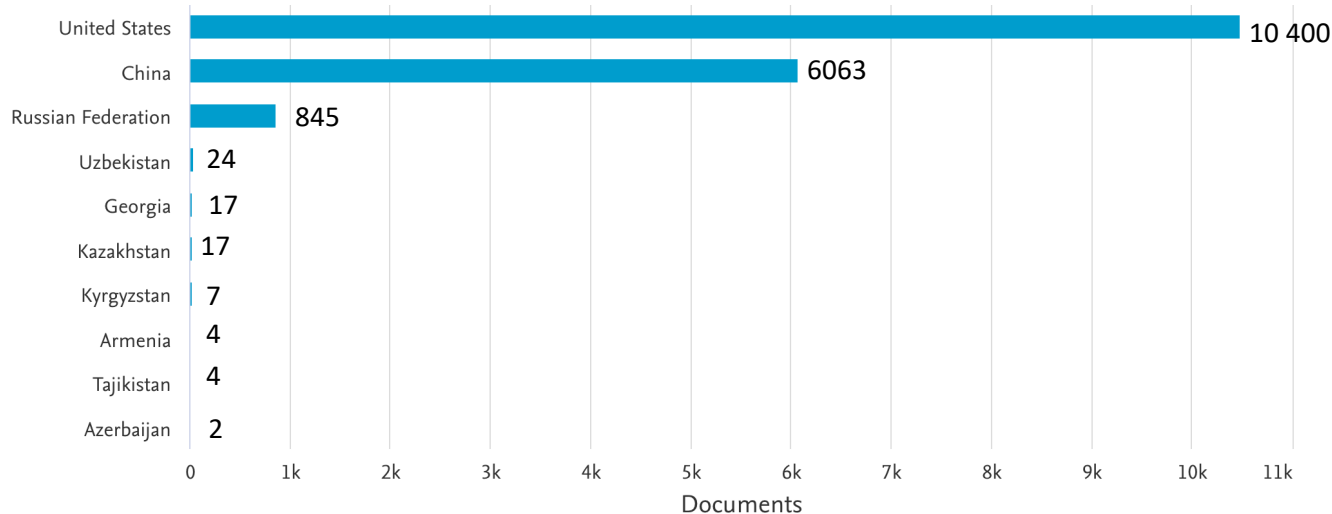


Keywords: food security, soil

Global publication activity sharply increase in the last 20 years

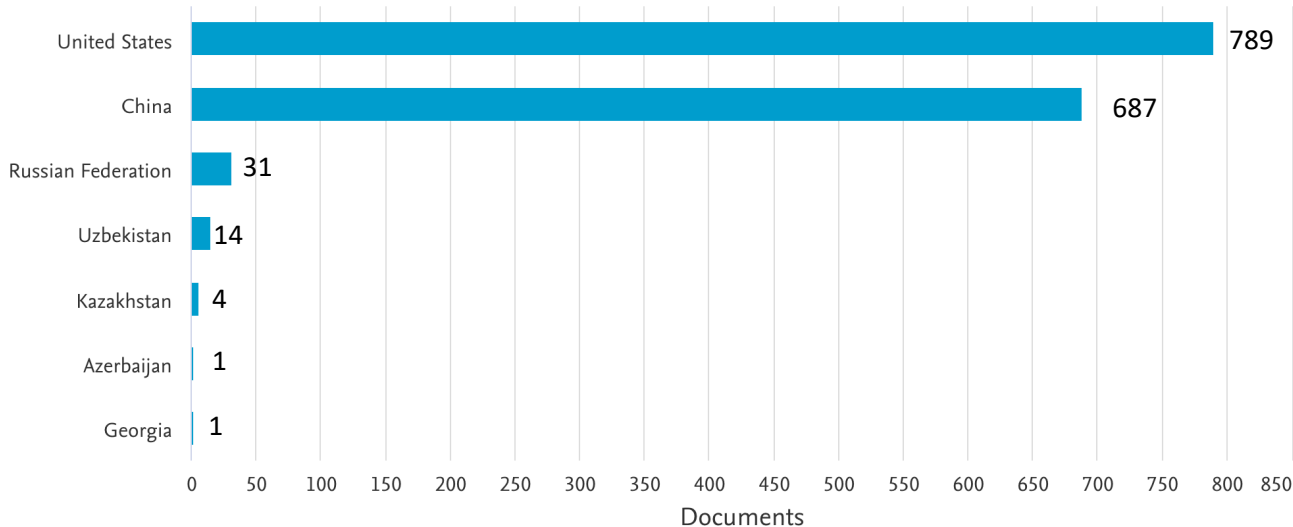
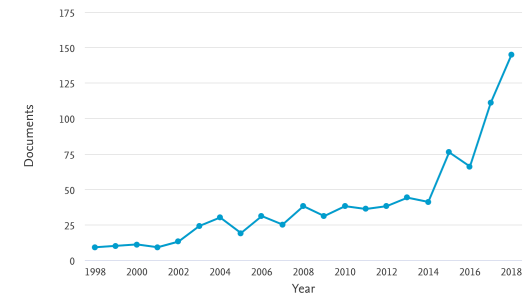
# Trends in publication on soil, climate change and food security in Eurasia

*Number of publication by keywords from 1998 till 2018*



Keywords: climate change, soil

**Increasing publication  
activity trend in  
Russia**



Keywords: food security, soil

**No publication activity  
trend in Eurasian  
countries were identified**

# Kazakhstan's livestock sector development for 2018-2027



	Baseline	Target by 2027
Cattle	7 million	15 million
Beef and lamb production	600 thousand tones	1,1 million tones
Pasture lands	58 million ha	100 million ha

The program will increase GHG emission **by 105%**

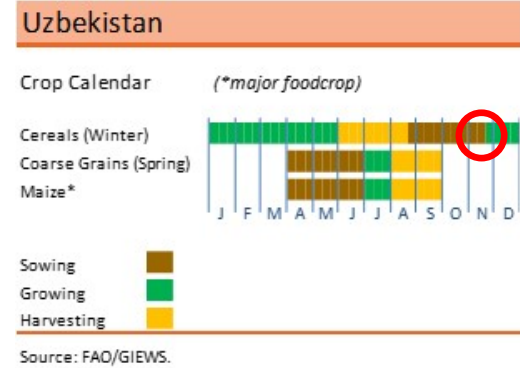
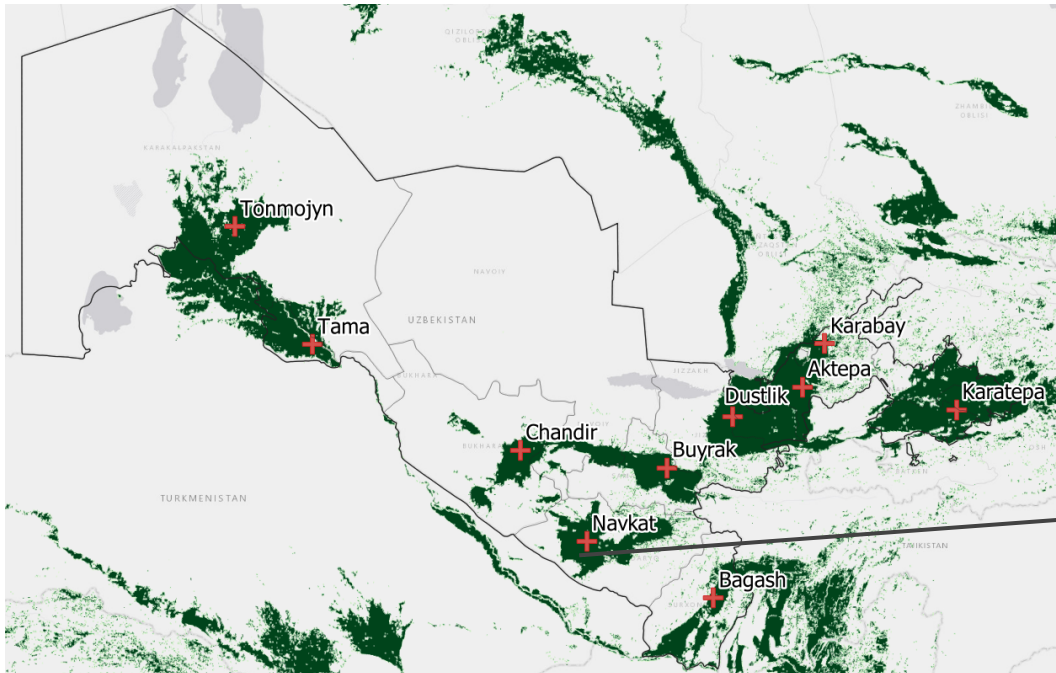
# How to achieve carbon neutrality?

- **Avoided emissions:** better production practices could decrease animal numbers and lead to 62% emission compared to baseline.
- **Soil carbon sequestration:** pasture lands expansion from 58 up to 100 mln.ha and restoration of degraded land will offer mitigation opportunity through carbon sequestration. Challenge is in the large discrepancy in the estimated grassland SOC potential when using different methodological approaches.

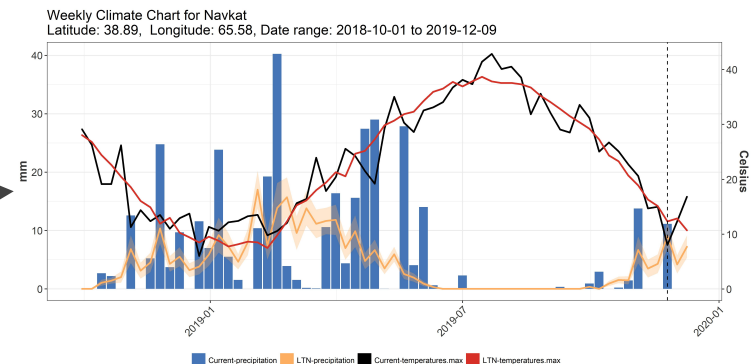
# Examples of near real-time potential of climate data use for proactive risk mitigation and policy-making in Uzbekistan

**Current cropping season context.** Wheat is one of two major crops grown in Uzbekistan. Planting of winter wheat has just ended and most production is under early vegetative stage, soon to enter dormancy phase. Climate change can create opportunities for winter crops in Uzbekistan ([IFPRI](#)) if adaptive measures are taken.

**Navkat locations in the 2019 cropping season:**

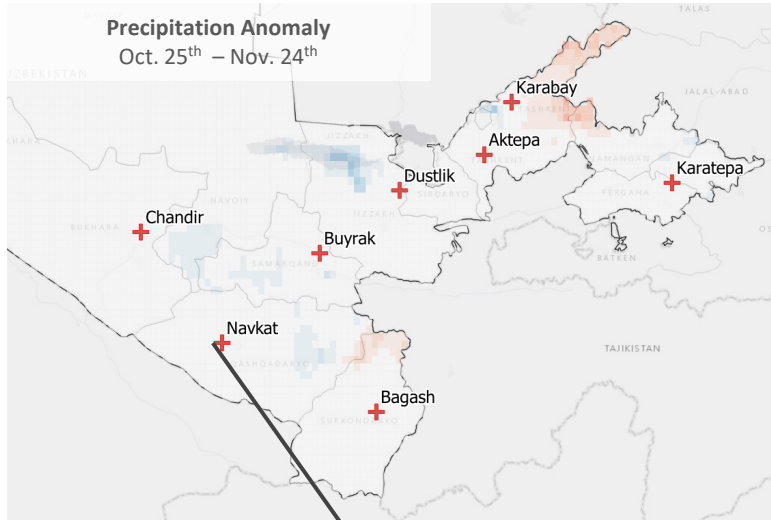


The **weekly climate chart** shows that in the Kashkadarya location of Navkat, despite dryness in the key months of March, rainfall was **overall above-normal throughout 2019**. Such rainfall patterns enables a favorable outlook for the winter crop production, particularly as **irrigation is prevalent** across croplands in the country.

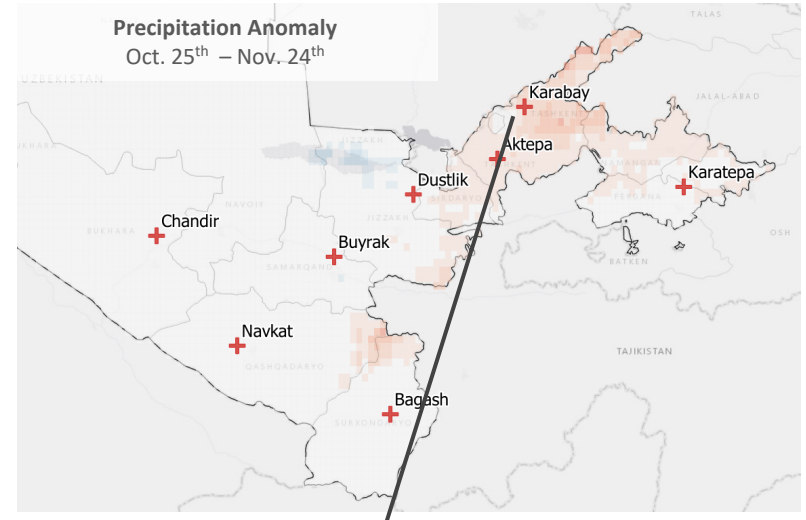
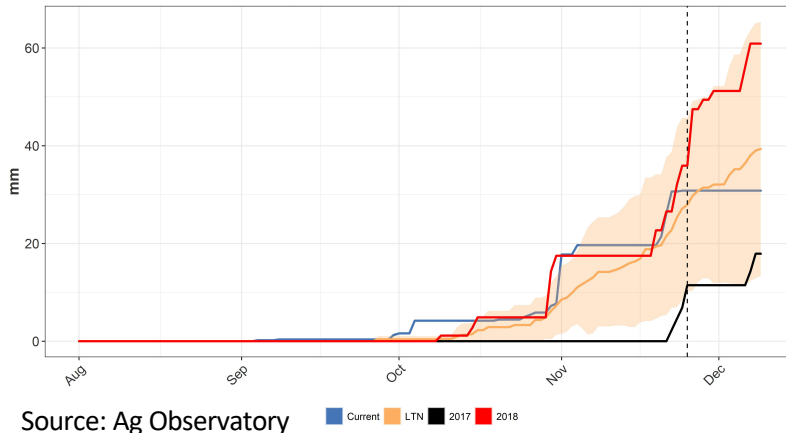


Source: Ag Observatory

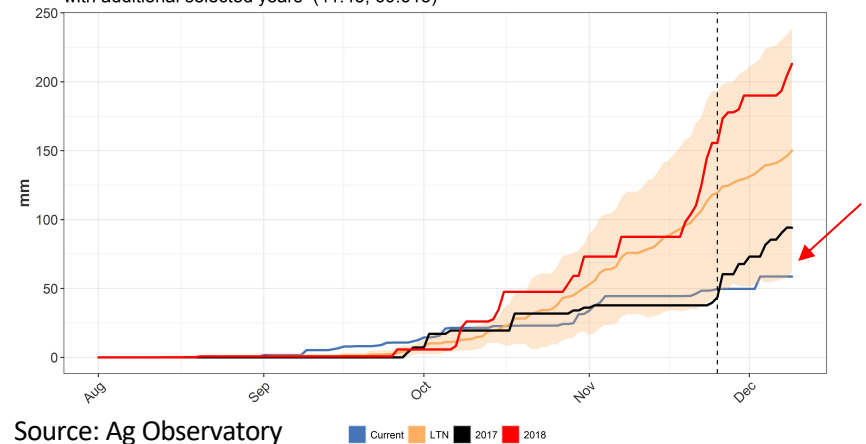
# Precipitation Anomaly



Navkat: Accumulated Precipitation  
with additional selected years (38.89, 65.577)



Karabay: Accumulated Precipitation  
with additional selected years (41.45, 69.615)



Accumulated precipitation for **Karabay** is tracking below average for the past month, whereas in **Navkat** rains are tracking close and slightly above average. The latter located in the highest winter wheat production in the country.



Thank you for your attention!

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