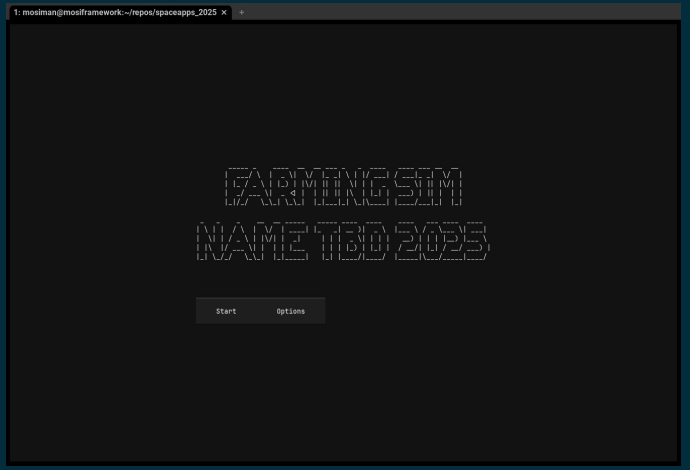
TermHarvest

Dillon Chan

Submission for NASA's SpaceApps 2025 under the **NASA Farm Navigators: Using NASA Data Exploration in Agriculture** challenge

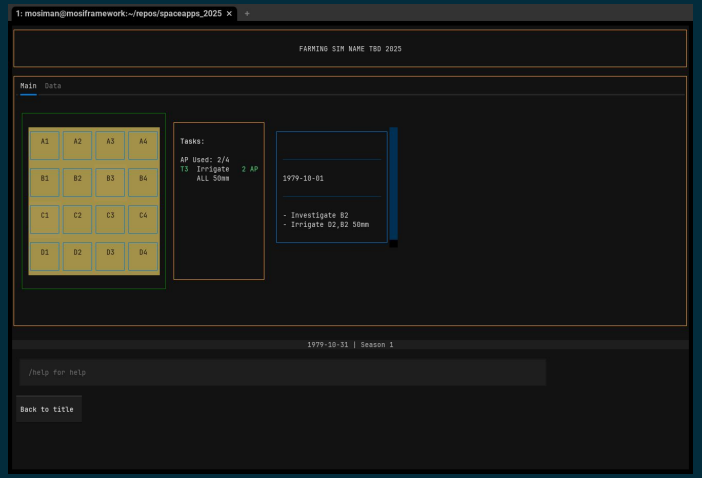
What is TermHarvest?

- Farming simulation game
- Based off of AquaCrop
- Incoporates mechanics that rely on
  - Soil moisture data
  - Normalized Difference Vegetation Index (NDVI)



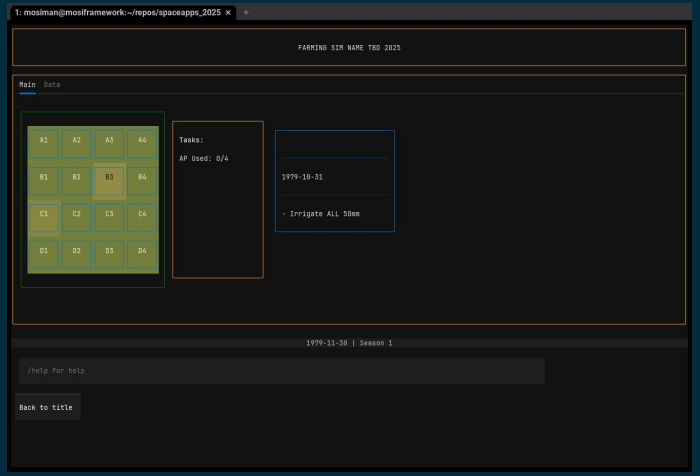
Gameplay

- Players start with little data, other than a visible representation of the farm
- Players can perform a certain amount of actions within each “session” (corresponding to ~ 30 simulation days)
- With each growing season, additional data views are unlocked
    - These data views are inspired by freely available NASA and CSA data!



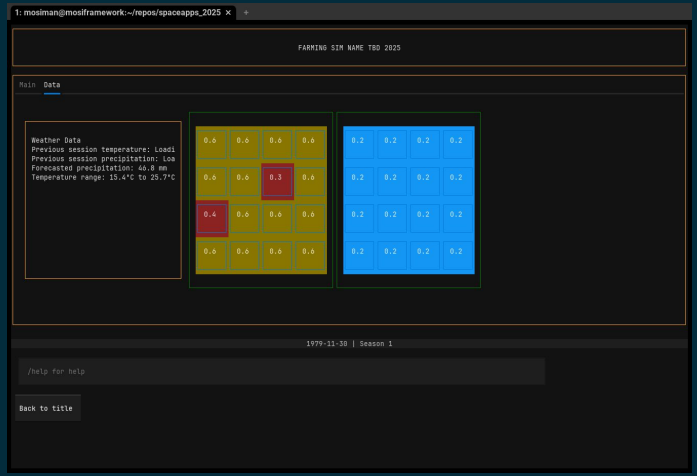
Watch out!

- Some sectors in the farm are susceptible to:
  - Pests and disease
  - Bad irrigation
- But without the right tools, it can be hard to tell!



NDVI and soil content

- Unlocking the NDVI and soil content data views can give you a heads up on potential problems, even if it’s not obvious from the visible view!
- In the future, these data views could be hooked up to real data coming from MODIS and other satellites!



Data

- [NASA] SMAP (Soil Moisture Active Passive)
  - https://www.earthdata.nasa.gov/data/instruments/smap-l-band-radiometer/near-real-time-data
- [NASA] NDVI/EVI data over a 16-day period via MODIS
  - https://www.earthdata.nasa.gov/data/catalog/lpcloud-mod13a2-061
- [NASA] Evapotranspiration data
  - https://www.earthdata.nasa.gov/topics/atmosphere/evapotranspiration/data-access-tools
- [CSA] RADARSAT Constellation Mission (RCM)
  - https://www.asc-csa.gc.ca/eng/satellites/radarsat/

These datasets inspired the core mechanics behind TermHarvest, but aren't actually used (but could be!)

Thanks!

For more info: https://github.com/mosiman/termharvest