Integration Efforts and Initial Products of ATUR Project

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Project Teams

Project Goals

Hydroclimate — Noah-MP, NWM → Estimate key water balance components in projected and future climate

Recharge — BFI, Spatial Analyses, GRACE → Identify suitable areas for recharge

Landscape — SnowPALM, ECOSTRESS, SWAT → Management practices and wildfire on ET, soil moisture, Q, sublimation

Urban — Empirical Analyses, HYDRUS 1-D, KINEROS2, CN Runoff/ Recharge Estimation → Potential for capture and recharge in urban environments

Filter

- Climate scenarios
- Influence of strategies on fluxes
- Screen in/out GW basins
- Priority areas based on stakeholder input

Translation

- AZ GW basins
- Users/ beneficiaries
- Tradeoffs
- Existing water portfolios (GW/SW)
- New management tool/process
- Water volume vs current demand
- Stakeholder priorities

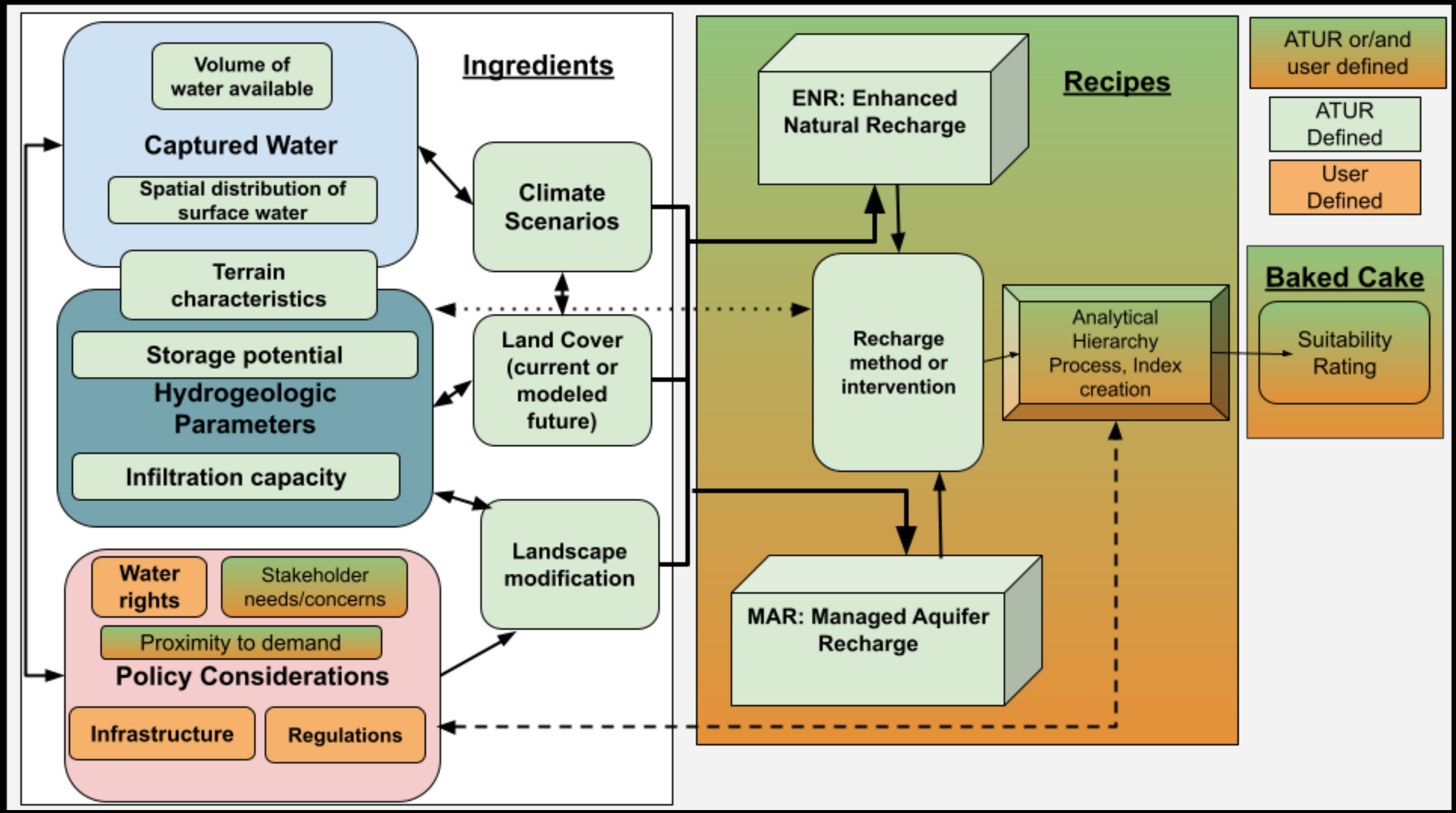
Prioritization Framework

Summary of current and projected changes in water balance in AZ GW basins

Map(s) of suitable areas for recharge and excess available runoff

Tradeoffs & potential of forest and rangeland management practices and wildfire on water balance fluxes

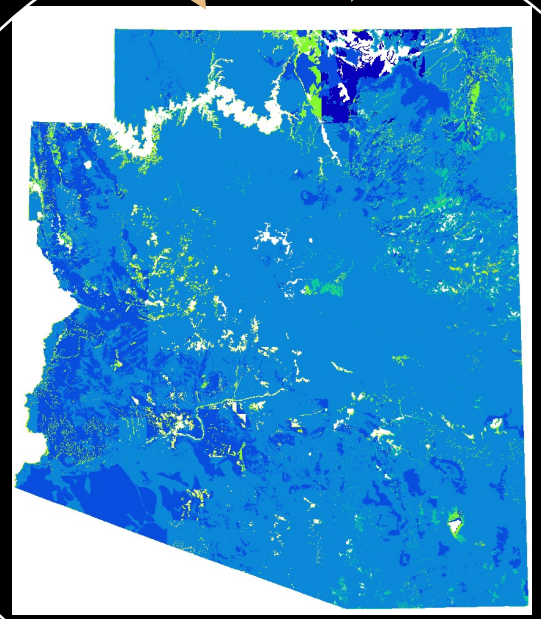
Potential for urban enhanced runoff to increase availability and recharge in urban environments


Ingredients
Volume of water available
Captured Water
Spatial distribution of surface water
Terrain characteristics
Storage potential
Hydrogeologic Parameters
Infiltration capacity
Water rights
Stakeholder needs/concerns
Proximity to demand
Policy Considerations
Infrastructure
Regulations
Climate Scenarios
Land Cover (current or modeled future)
Landscape modification
Recipes
ENR: Enhanced Natural Recharge
Recharge method or intervention
MAR: Managed Aquifer Recharge
Analytical Hierarchy Process, Index creation
ATUR or/and user defined
ATUR Defined
User Defined
Baked Cake
Suitability Rating

Capture:
Playas
Ponding after storms
Sublimation of snow
Soil evaporation
Loss from flowing streams/marshes
Losses from reservoirs and lakes
ET from riparian vegetation
ET from forests
ET from rangelands
Contribution from impervious surfaces (e.g. urban areas)

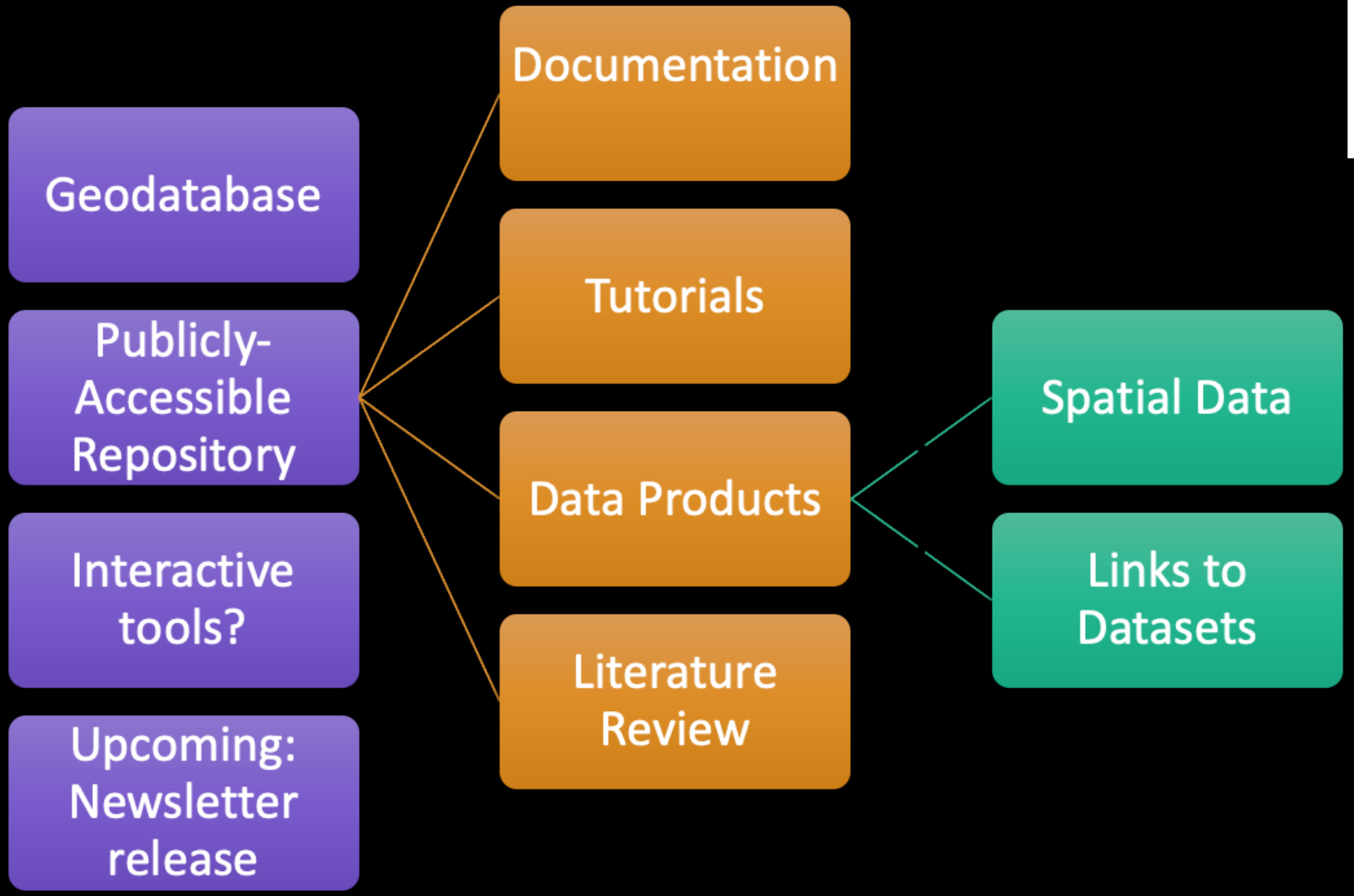
Supply & Capture Potential

Recharge Suitability



Recharge:
Enhanced Urban Recharge
Increased retention basin and dry well coverage
Redesigned impervious area network
Enhanced Streambed Recharge
Capturing & managing extreme events
Capturing land surface flows and directing towards streambeds/riparian areas
Enhanced Distributed Recharge
Reduced ET (e.g. thinning)
Capture of sheet flow, esp. in alluvial context
Enhanced Mountain Front Recharge
Addition of retention structures
Redirection of sheet flow towards fractures and faults
Enhanced Focused Recharge
Protection/management of fast infiltration to karst features
Capture of/Reduced ET from depression focused recharge features, e.g. playas
MAR & Constructed Options
Injection wells
Spreading basins

Data & Sharing



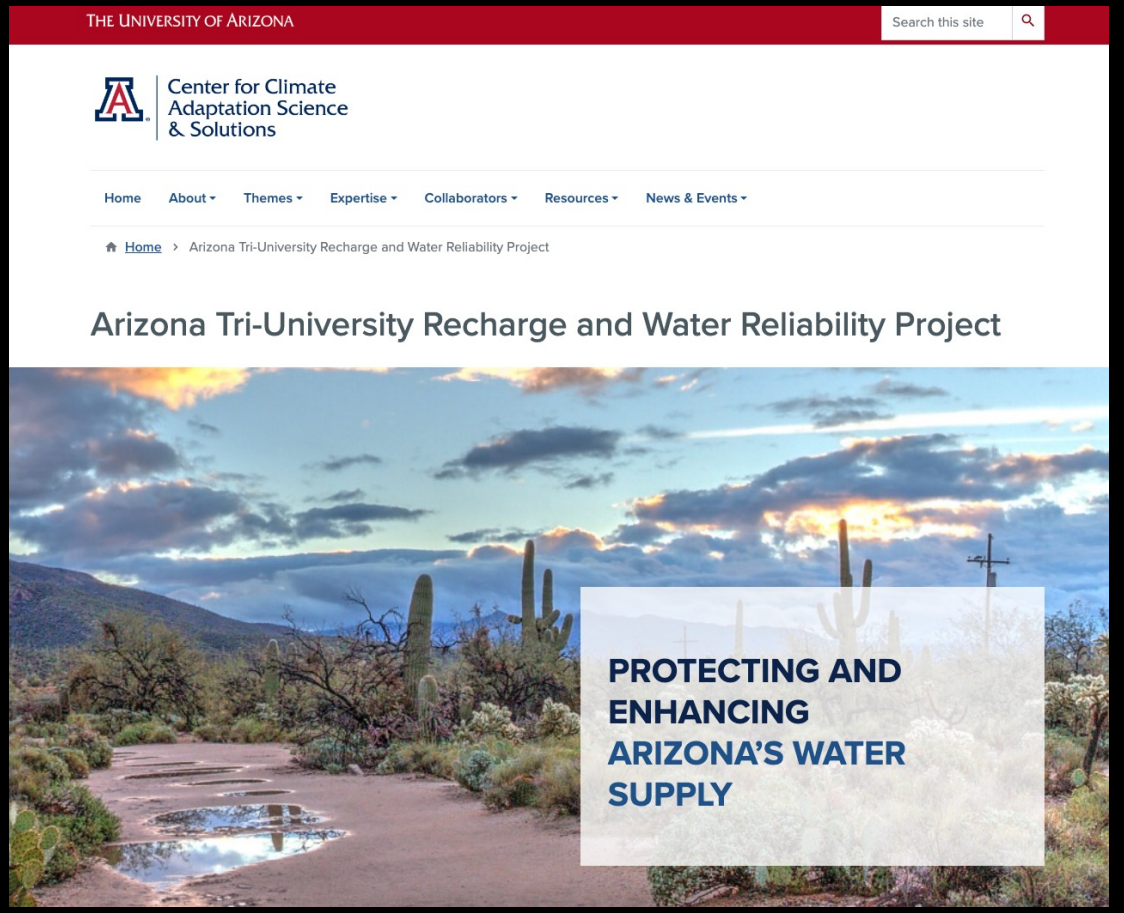
GitHub

HYDROSHARE

BUREAU OF RECLAMATION

Initial Products

- Initial recharge suitability maps
- Development of statewide hydroclimate models
- Compilation of datasets (spatial layers, observational, remote sensing)
- Estimates of ET from forest thinning practices
- Recharge potential of drywells and retention basins



Questions?

Thank you for your time!

We welcome your feedback: