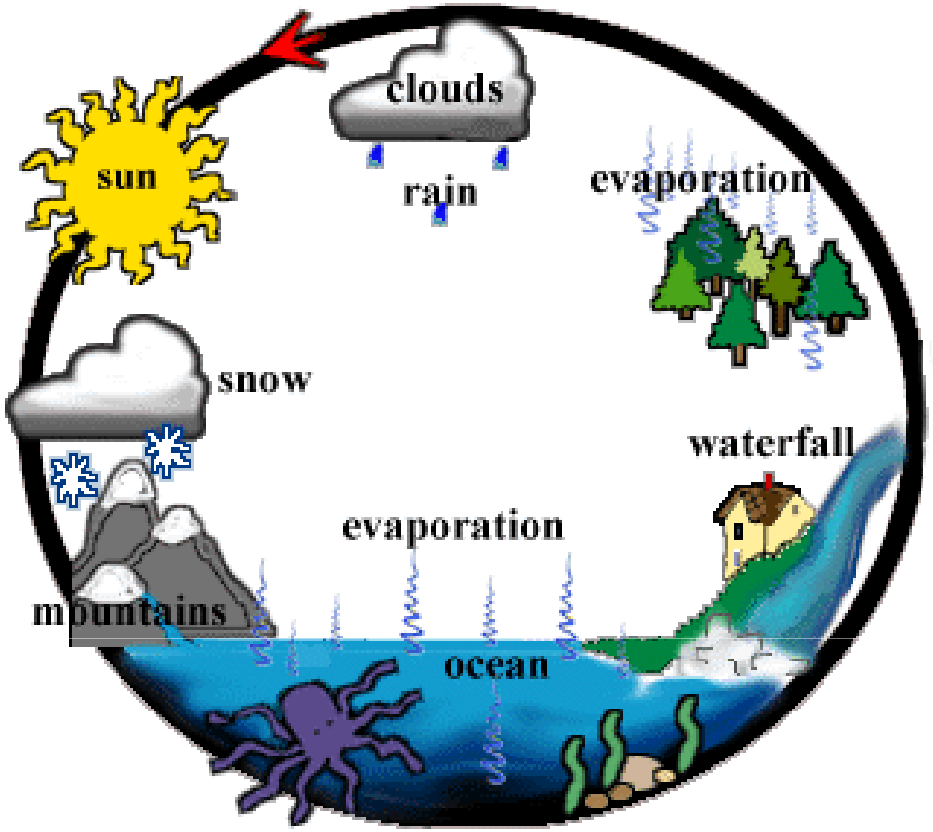


Scope and possibilities for Geospatial technology in Andhra Pradesh

Dr. K.VenuGopal

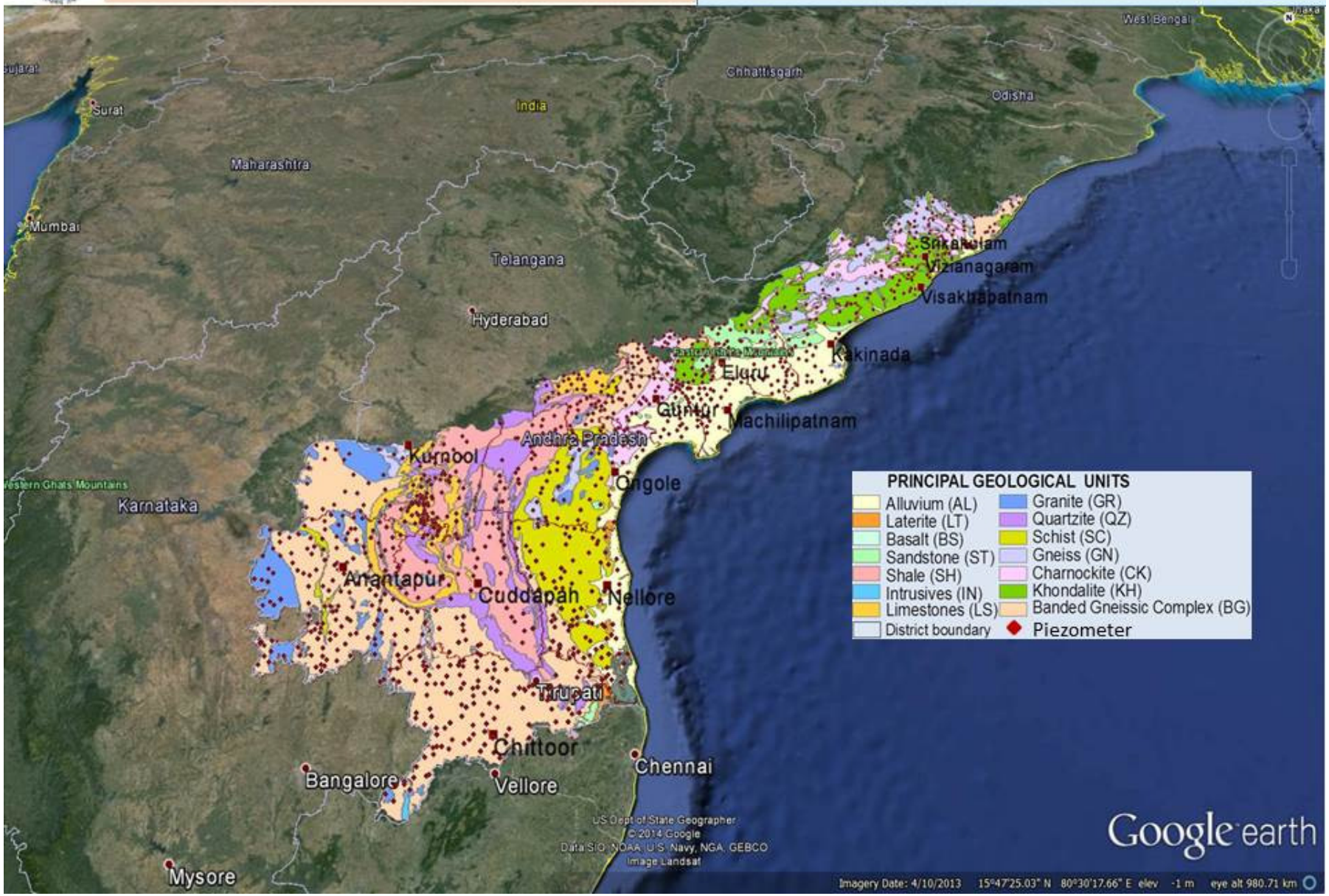
Director, GWD, Hyderabad

Geospatial Technology For Groundwater Applications

- Spatial distribution of Groundwater in space and time
- Spatial distribution of wells in different hydro geological settings and agro climatic zones
- Temporal and spatial distribution of well yields
- Distribution of cropping systems for demand and supply gaps

GOVERNMENT OF ANDHRA PRADESH
GROUND WATER DEPARTMENT

Geology of Andhra Pradesh and Piezometer Network

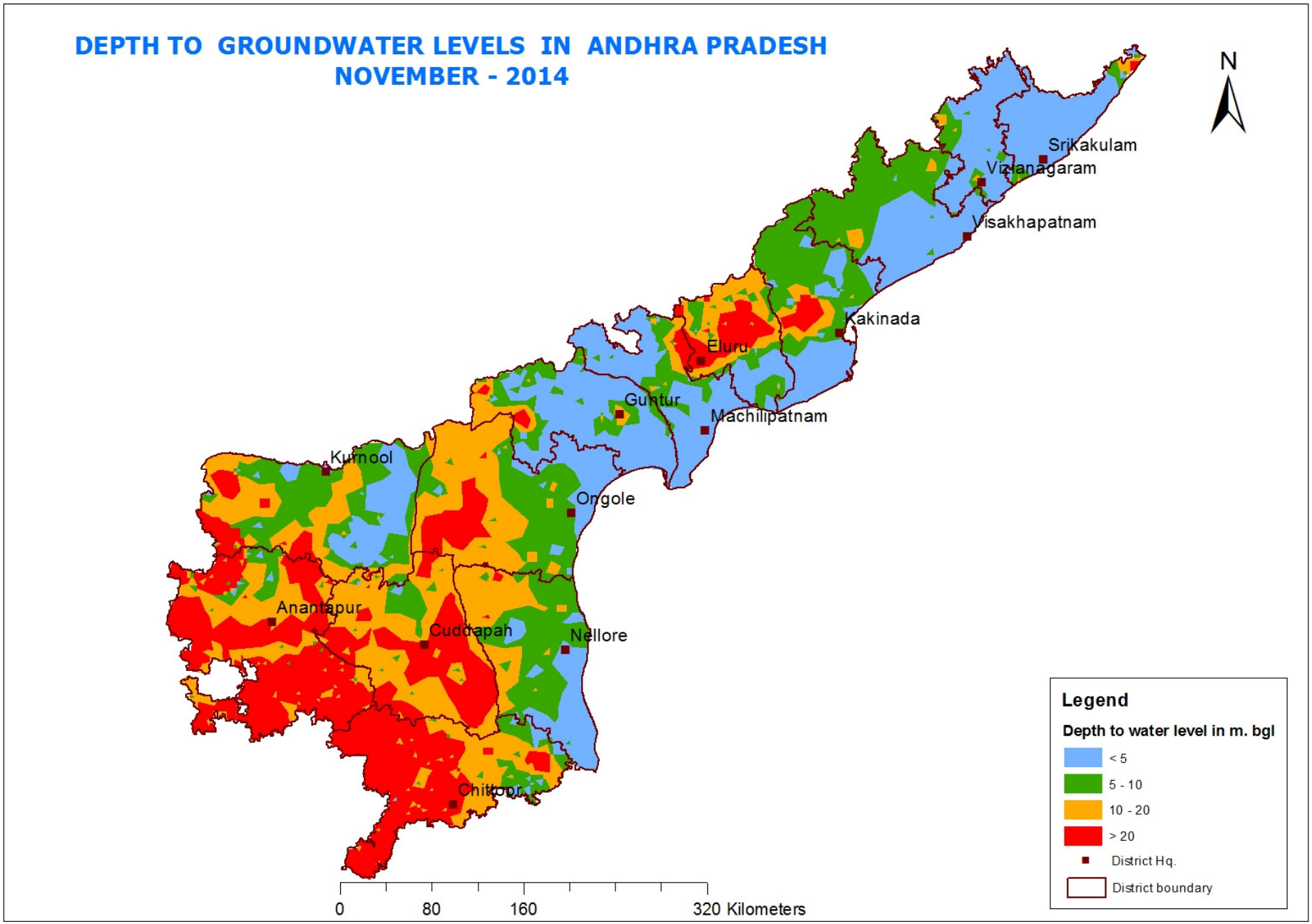


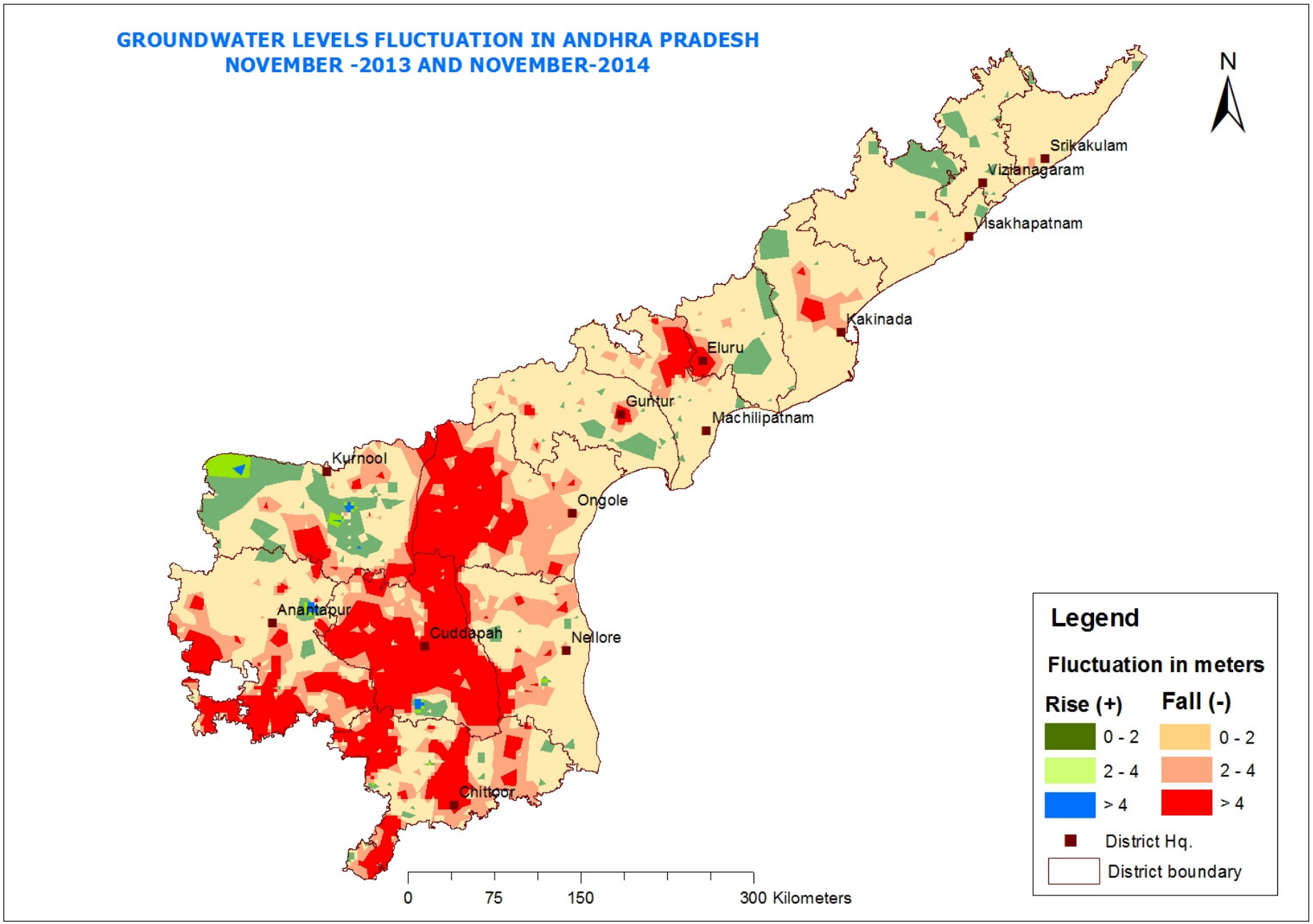
- Geospatial technology helps us to utilize effectively, real time data like
- Water level fluctuations for assessing drought
- Relating yields with water levels
- Changing ground water quality
- Effective use of wind and solar characteristics for harnessing non conventional energy

- Helps us in planning water use in conjunction with
- Rain, runoff and soil moisture
- Water application and water sharing in water scarce regions
- Improving crop for drop of water

- A beginning is made by AP ground water department updating ground water levels every month
- planning for real time data at more frequent intervals by installing Digital water level recorders with telemetry
- Study ground water in conjunction with environmental flows monitored by planning department
- Mapping influent and effluent nature of streams in space and time

DEPTH TO GROUNDWATER LEVELS IN ANDHRA PRADESH
NOVEMBER - 2014



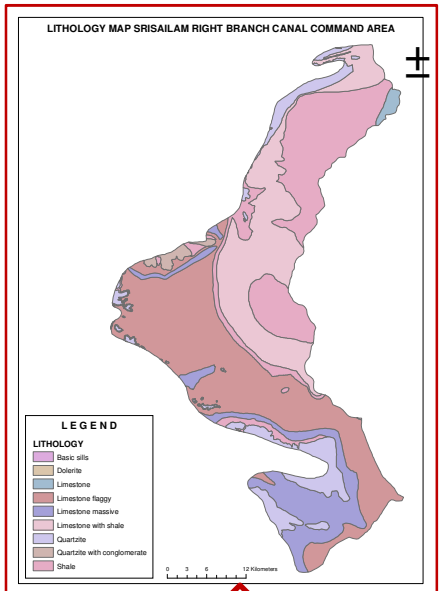

GROUNDWATER LEVELS FLUCTUATION IN ANDHRA PRADESH
NOVEMBER -2013 AND NOVEMBER-2014
N
Srikakulam
Vizianagaram
Visakhapatnam
Kakinada
Eluru
Guntur
Machilipatnam
Kurnool
Ongole
Anantapur
Cuddapah
Nellore
Chittoor
0
75
150
300 Kilometers
Legend
Fluctuation in meters
Rise (+)
Fall (-)
0 - 2
0 - 2
2 - 4
2 - 4
> 4
> 4
District Hq.
District boundary

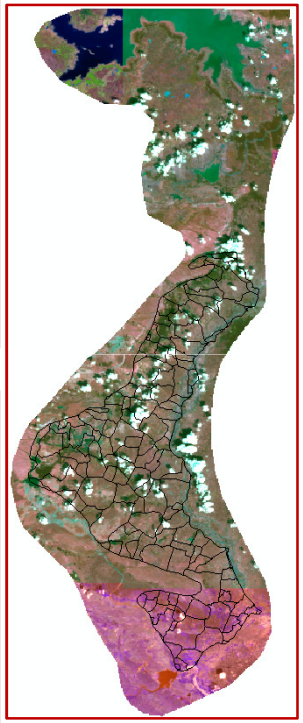
- Spatial distribution of wells in command and non command areas helps us in
- Conjunctive use planning with well defined well network and their responses in time
- Set right skewed development of groundwater in command and non command where
- Stage of groundwater development in Andhra Pradesh in command is 22% compared to 57% in noncommand

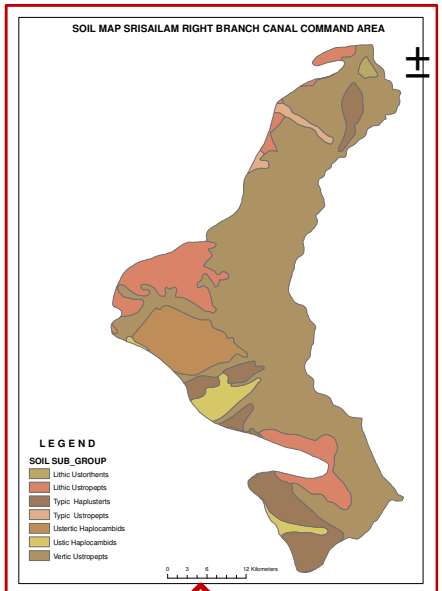
- Helps us in planning ground water optimally
- In context of inter transfer of basin water resources from surplus to deficit basins like
- Transferring surplus water from Godavari to Krishna and from Krishna to Penna river
- With 30% recharge to groundwater water table
- Ground water table rise, revive defunct wells, sustain existing wells and for development of new wells

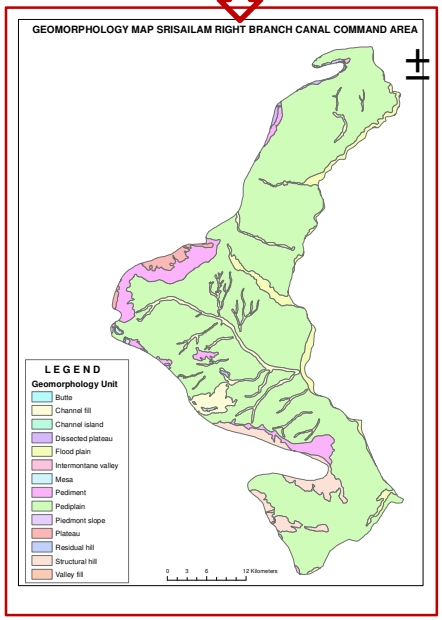
- In effectively utilizing and integrating existing data along with geospatial technology under Neeru-Chettu a submission of Primary sector
- Improve ground water sustainability
- Bridging gap ayacut through conjunctive use
- Promote water security at panchayat level
- Increase crop for drop through micro irrigation

Potential Zones Demarcation









DATA

Satelite Data – LISS III /IRS 1C PAN

Data Used

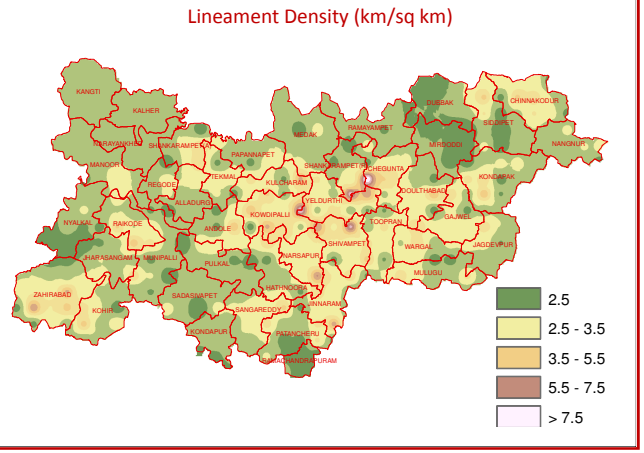
- Daily Rainfall
- Groundwater Levels
- Geophysical Data (VES, Lithologs etc)

Spatial Data (From Satelite image/ SOI etc)

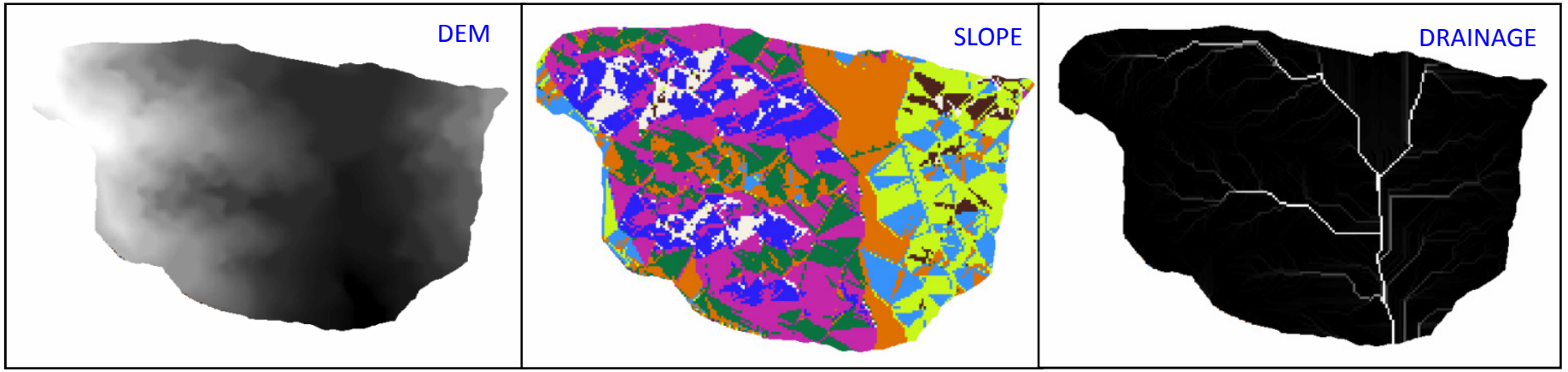
- Geomorphology
- Geology
- Soil
- Slope
- Land use
- Drainage

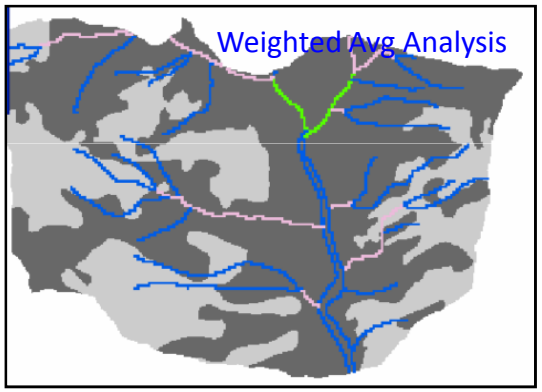
Derived Data (from above Layers)

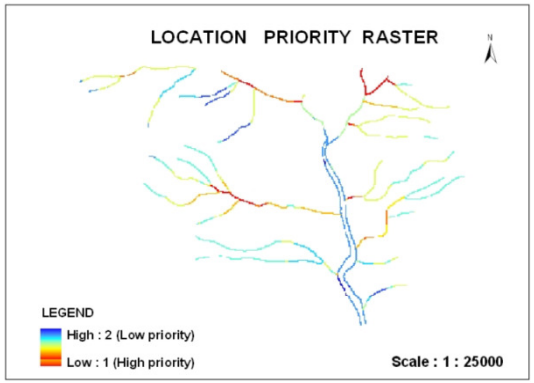
- Drainage density
- Lineament density
- Maximum groundwater level variations
- Depth to weathered portion



Finding Locations for construction of Artificial Recharge Structures







DATA

Data Used

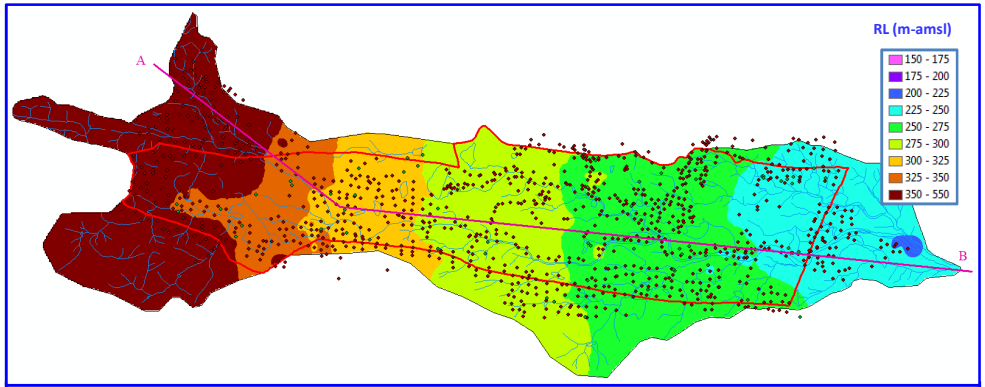
- DEM
- Slope
- Soil
- Drainage
- Geology
- Geomorphology
- LULC

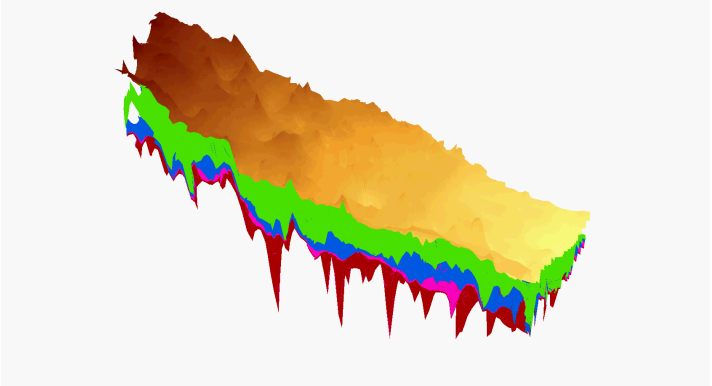
Results

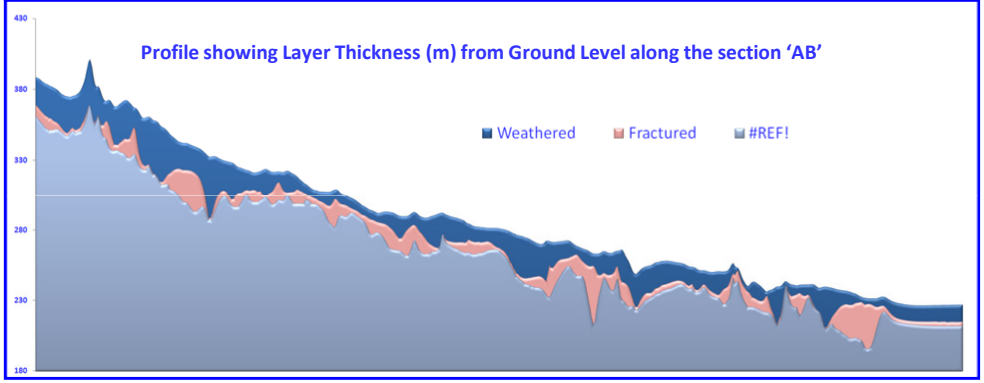
Derived Data (from input Layers)

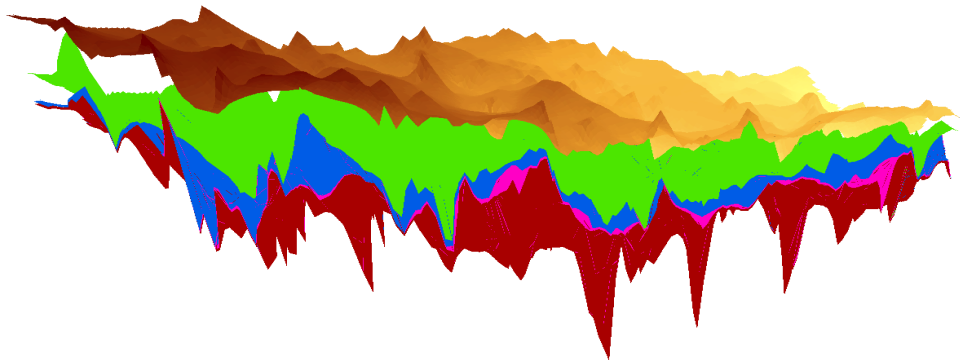
- Drainage Density
- Lineament Density
- Locational Priority for Artificial Recharge Structures

Aquifer Mapping

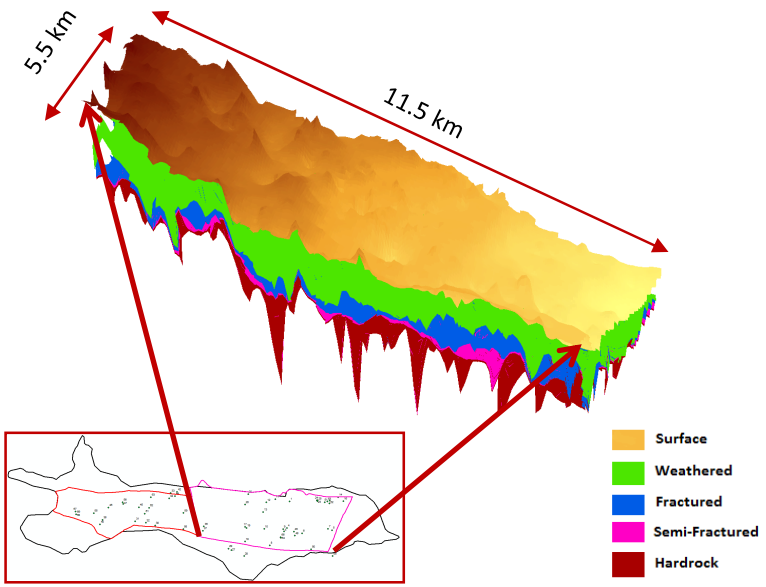








3D view of AquiferLayers





NEDU నేడు



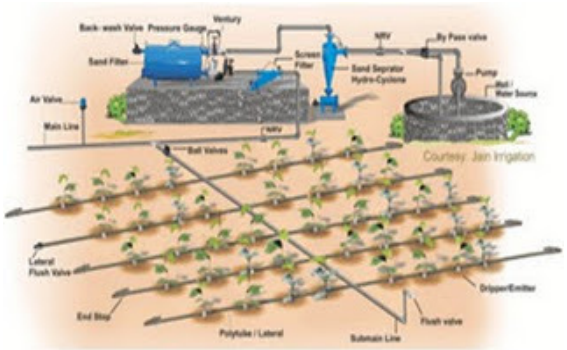
- *More area under groundwater irrigation, high water requirement crops, flow irrigation practices etc., created stress on groundwater resources resulted in*
  - ✓ *depletion of water table*
  - ✓ *decrease in well yields, drying up wells*
  - ✓ *consumption of more power for lifting same quantity of water*
  - ✓ *deterioration of water quality etc.,*
- *Reduction in Recharge rate due to concretization, change in land use practices etc.,*
- *Deterioration of Soil health due to changed agriculture practices (high use of fertilizers and pesticides, multiple crops etc.,)*

ఆంధ్రప్రదేశ్ భూగర్భజల శాఖ

రేపు నీరు - చెట్టు

ఆంధ్రప్రదేశ్ భూగర్భజల శాఖ

REPU NEERU-CHETTU



NEERU-CHETTU MISSION:

- ***Drought proof the State***
- ***Control the Wastage of water to the Sea***
- ***Water Conservation and Management***
- ***Soil moisture conservation***
- ***Watershed treatment***
- ***Rainwater Harvesting Structures construction***
- ***Catchment area treatment***
- ***Degraded lands treatment & Increase the area under green cover***
- ***Increase the production and productivity***
- ***More productivity per drop of water***
- ***Improve the groundwater recharge***
- ***Desilting of tanks and restoration of tank cascades and irrigation systems***
- ***Conjunctive use of Surface water & Groundwater***
- ***More area under MIP (Drip & Sprinkler)***
- ***Integrated Plans for sustainability of Irrigation sources***
- ***Improve the Water use Efficiency, Reduce the gap ayacut***
- ***Promote Solar and other non conventional energy sources***
- ***Encourage Participatory Irrigation Management***


రేపు
ఆంధ్రప్రదేశ్ భూగర్భజల శాఖ
నీరు - చెట్టు
REPU
NEERU-CHETTU
• Soil & Moisture Conservation
• Water Conservation
• Additional recharge to groundwater
• Increase in area under Irrigation
• Micro-Irrigation Practices
• Solar Power
• More productivity for drop of water

Thank you