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MOR2: BOUNDARY ANALYSIS

Boundary Hypothesis

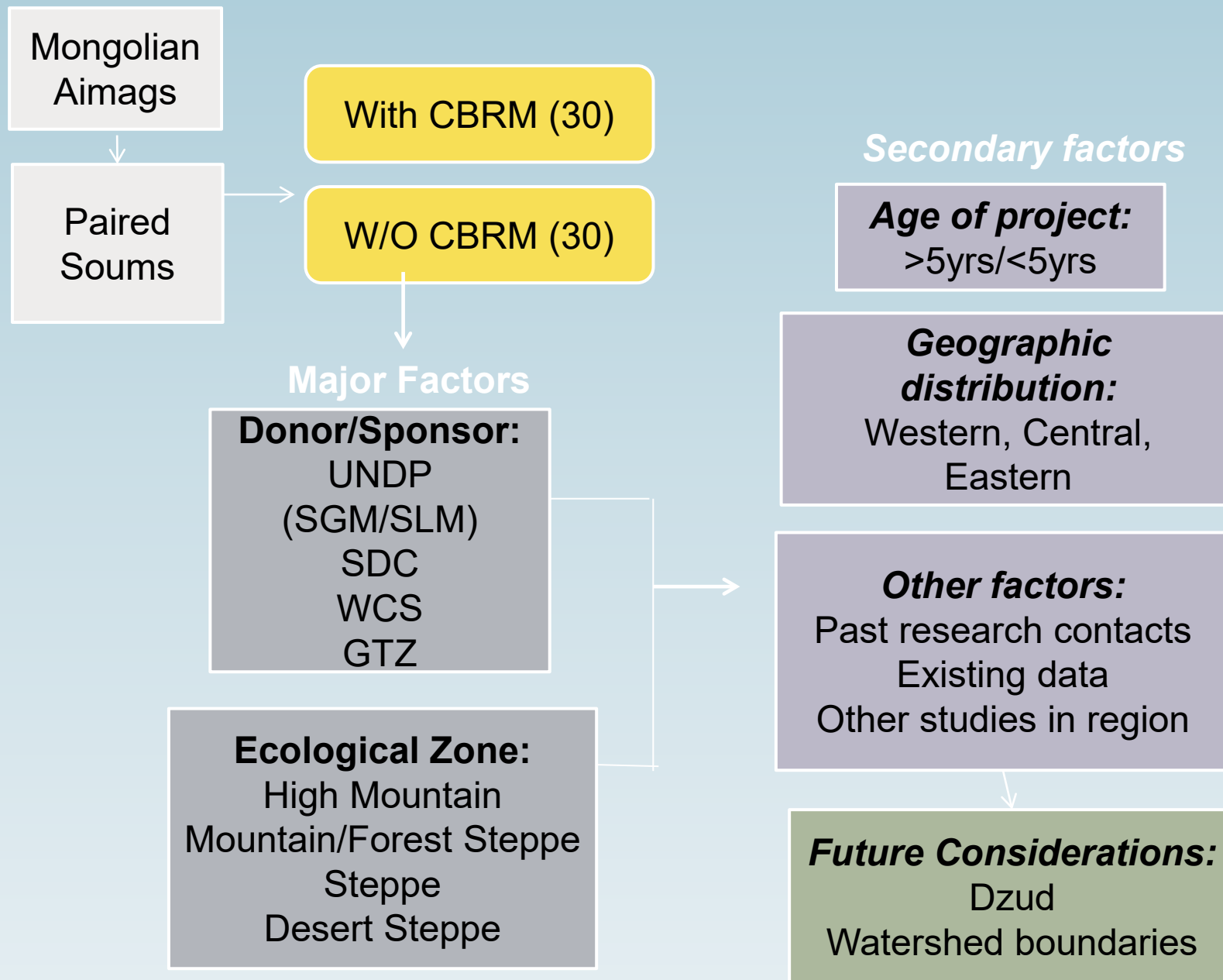
- ④ Hypothesis 1: Units of analysis
 - Overlay-patchwork analysis of physical, ecological, social, and political boundaries using geographic information system
- ④ Hypothesis 2: Cross boundary migration
 - Edge effects of boundaries
 - Ecological and social gradients
 - Cross-scale temporal and spatial linkages
- ④ 3-D Visualization

- ⦿ Participatory mapping (2012)
- ⦿ Boundaries of multiple landscapes
 - Research boundaries based upon political jurisdictions (soums)
 - Defined research landscape based upon socio-ecological sites (HH and ecological plots)
 - Nested within research boundary
 - Migration patterns
- ⦿ Integration/intersection across scales

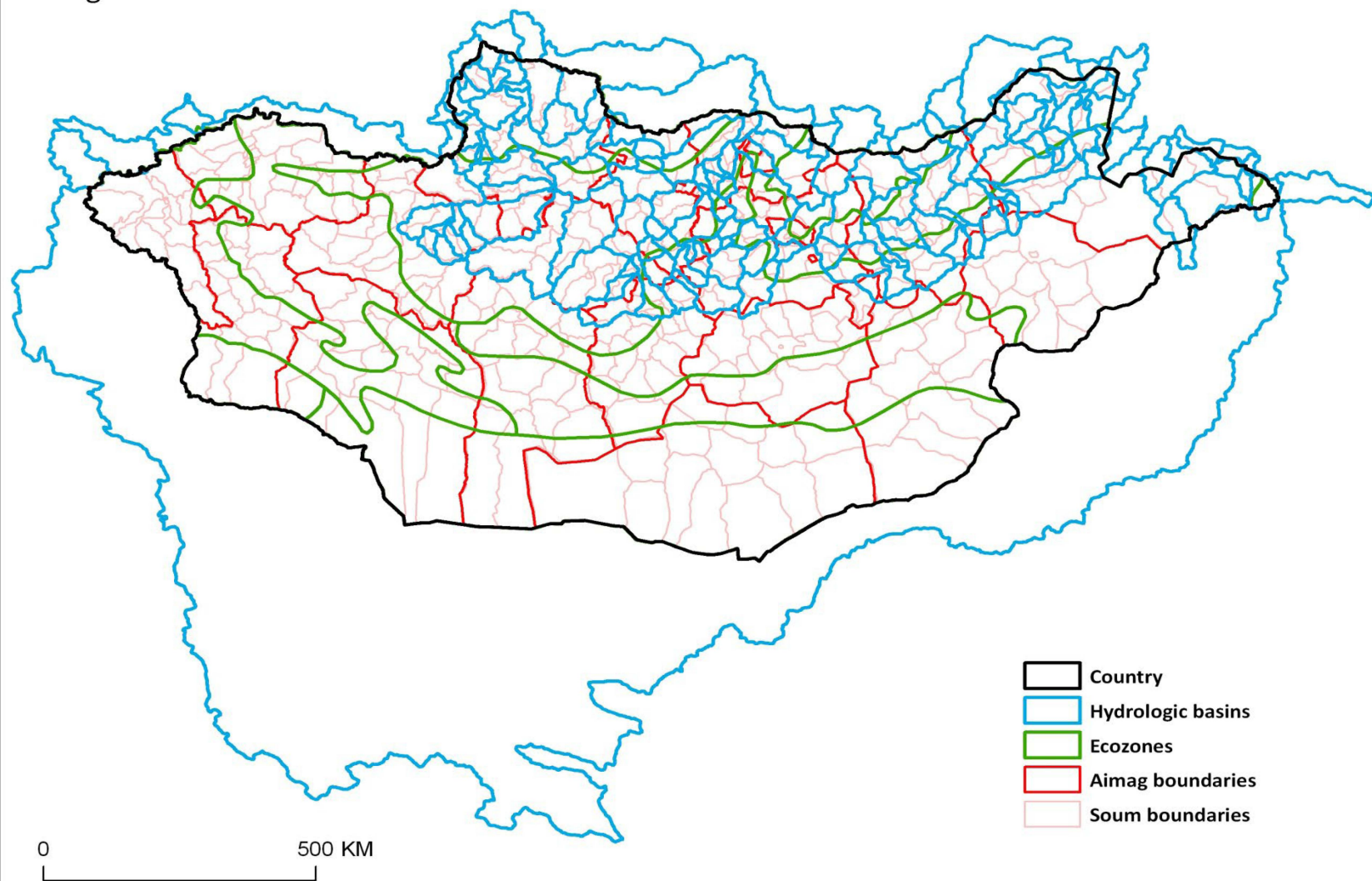
Typology of Boundaries

- ⦿ Soum
 - Political jurisdiction
- ⦿ Physical boundaries
 - Watersheds
 - Stream networks
 - Water points: springs
- ⦿ Ecoregion
 - Fuzzy boundaries
- ⦿ Social boundaries and networks
 - Seasonal migration
 - Networks
 - Pasture groups

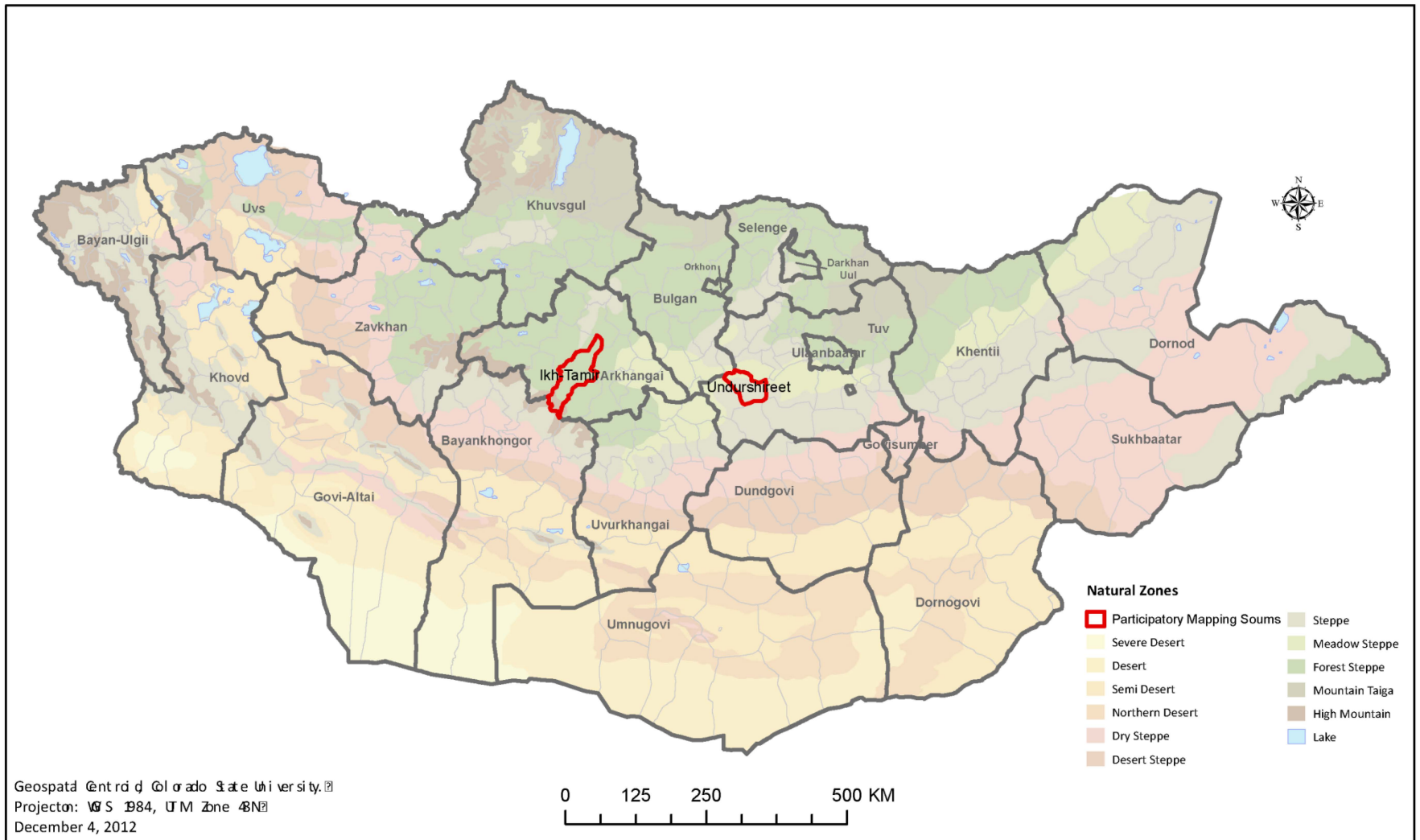
Study Site Selection Process – 28/10/2010 (for further detail refer to 24/10/2010 meeting)

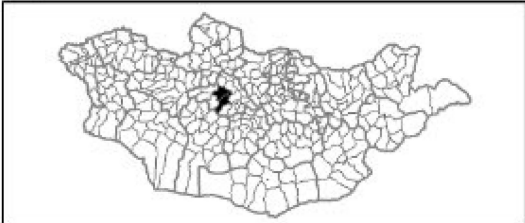
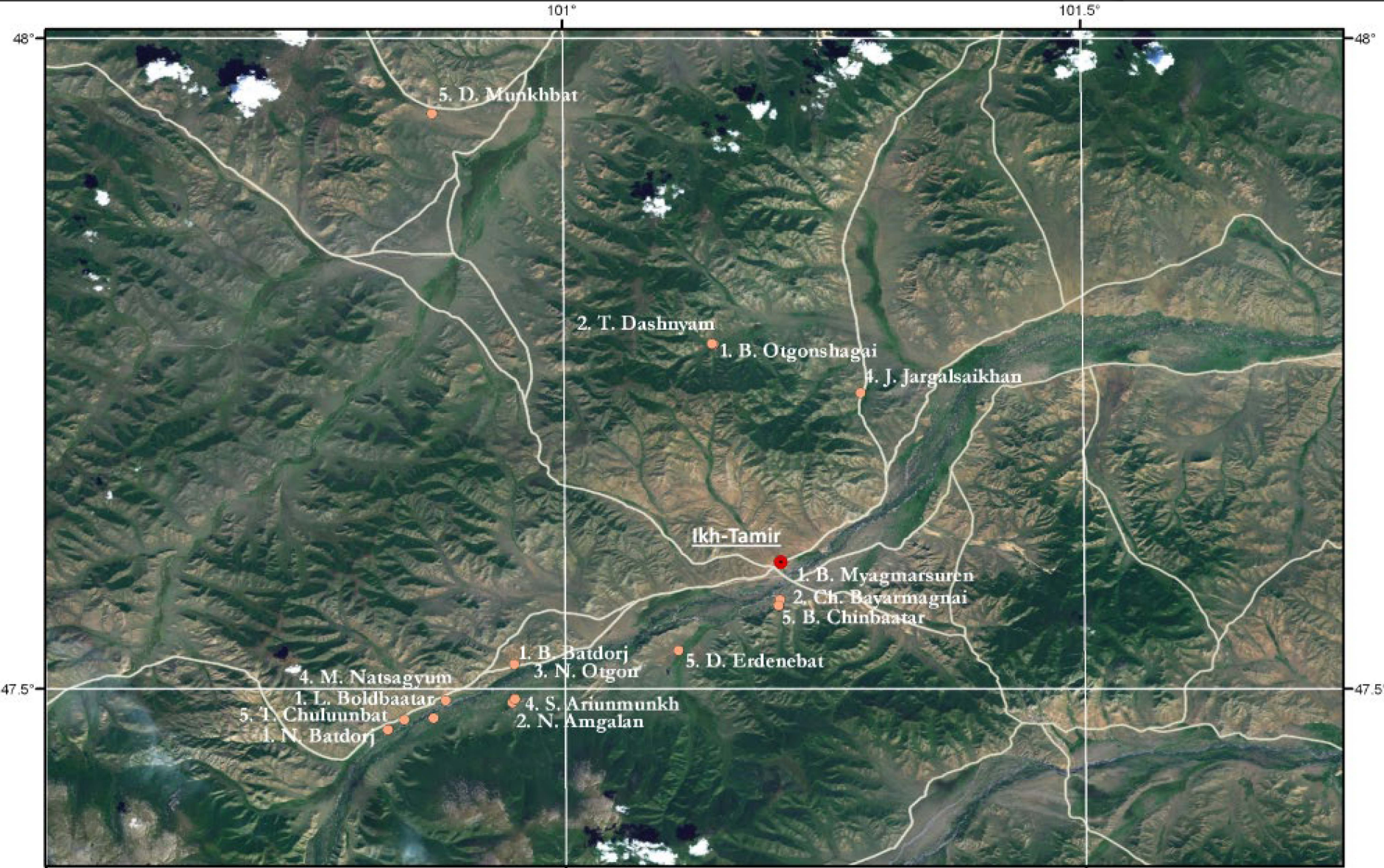


Mongolia: Boundaries



Mongolian Rangelands and Resilience: Participatory Mapping Sites in Ikh Tamir and Undurshireet, Mongolia



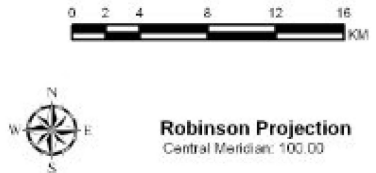


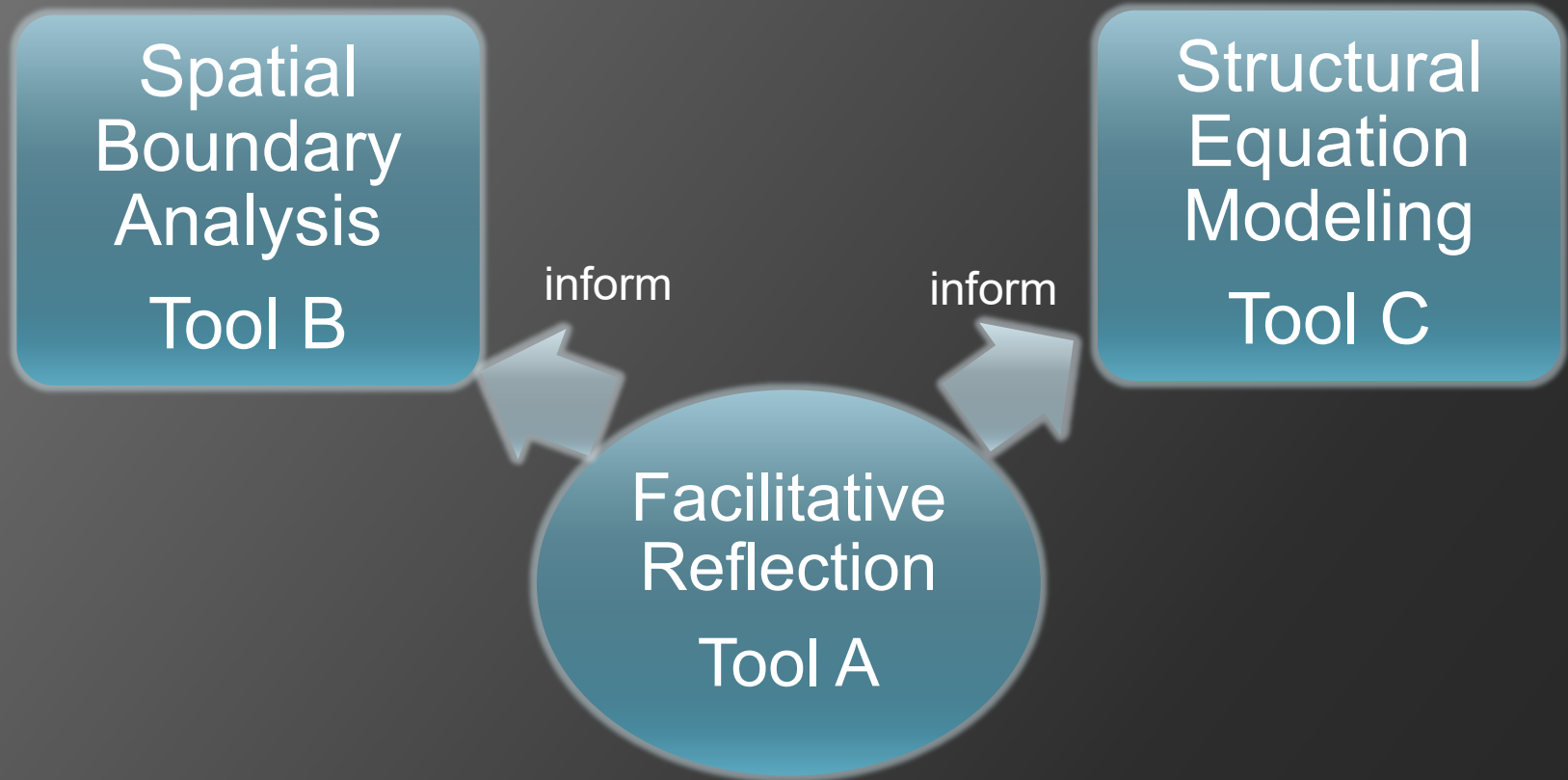
● Household Survey locations

(None are winter camps)

ARKHANGAI

Ikh-Tamir





What tools can be applied to integrate multi-disciplinary data on socio-ecological systems? A Case Study of the Mongolian Rangelands and Resilience Project

SPATIAL BOUNDARY ANALYSIS - TOOL B

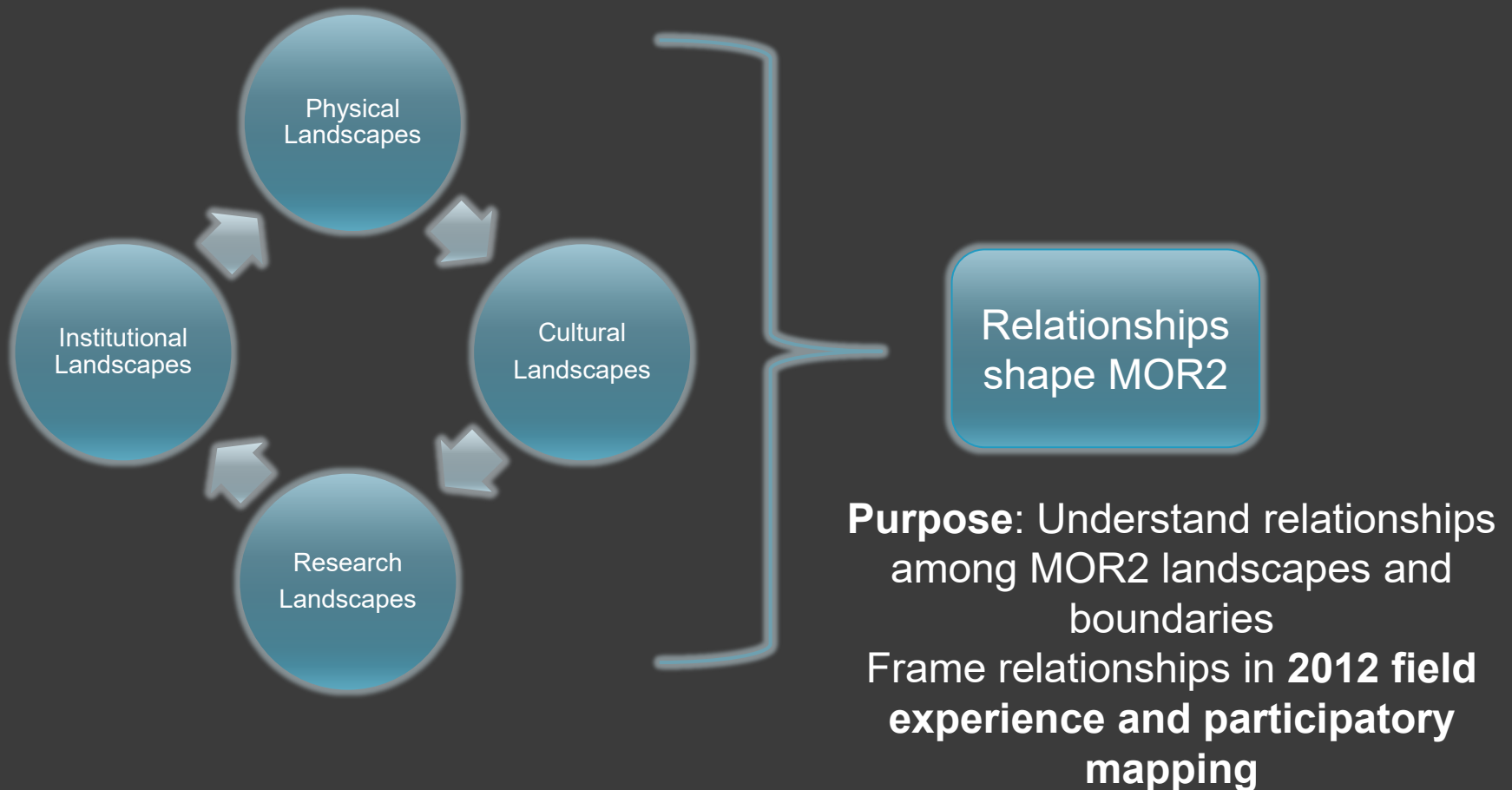
RQ1 What are the spatial relationships among research, institutional, and cultural landscapes in MOR2?

RQ1A: Where can we identify “boundaries of intensity” based on grazing practices, CBNRM, and markets?

Landscape	Variables and GIS layers
Research	MOR2 study sites, Partner Organization Study Sites
Institutional	CBNRM (PUG) groups
Cultural	Grazing practices (Otor), Seasonal movement, Nutag,
Economic	Distance to Markets (Soum centers), Livestock # & type
Physical	Slope, Aspect (DEM), Elevation, Precipitation, Soil Type

RQ2 What are the MOR2 team perceptions of the relationships among social, physical, and ecological concepts within MOR2?

SPATIAL BOUNDARY ANALYSIS - TOOL B



RQs are limited to **Ikh Tamir and Undurshireet soums, where we conducted the participatory CBNRM herding groups and local officials**

SPATIAL BOUNDARY ANALYSIS – METHODS

- ◉ Mixed Methods Approach
 - Qualitative:
 - Participatory Mapping process and focus groups with CBNRM Herding Groups
 - Verifying and Boundary Analysis with core MOR2 team
 - ◉ Quantitative:
 - Geo-referencing participatory maps
 - GIS Density and Buffer Analyses of grazing practices, CBNRM, and markets

Participatory Mapping

- PURPOSE: To get an in depth understanding of social, political, physical, and institutional landscapes and boundaries through participatory mapping
- Undurhireet and Ikh Tamir have both CBRM herder groups or PUGs (*Khesig*)
- Donor groups include Swiss Agency for Development Cooperation (SDC)
- CBRM group formation
Ikh Tamir: 2005
Undorshireet: 2007



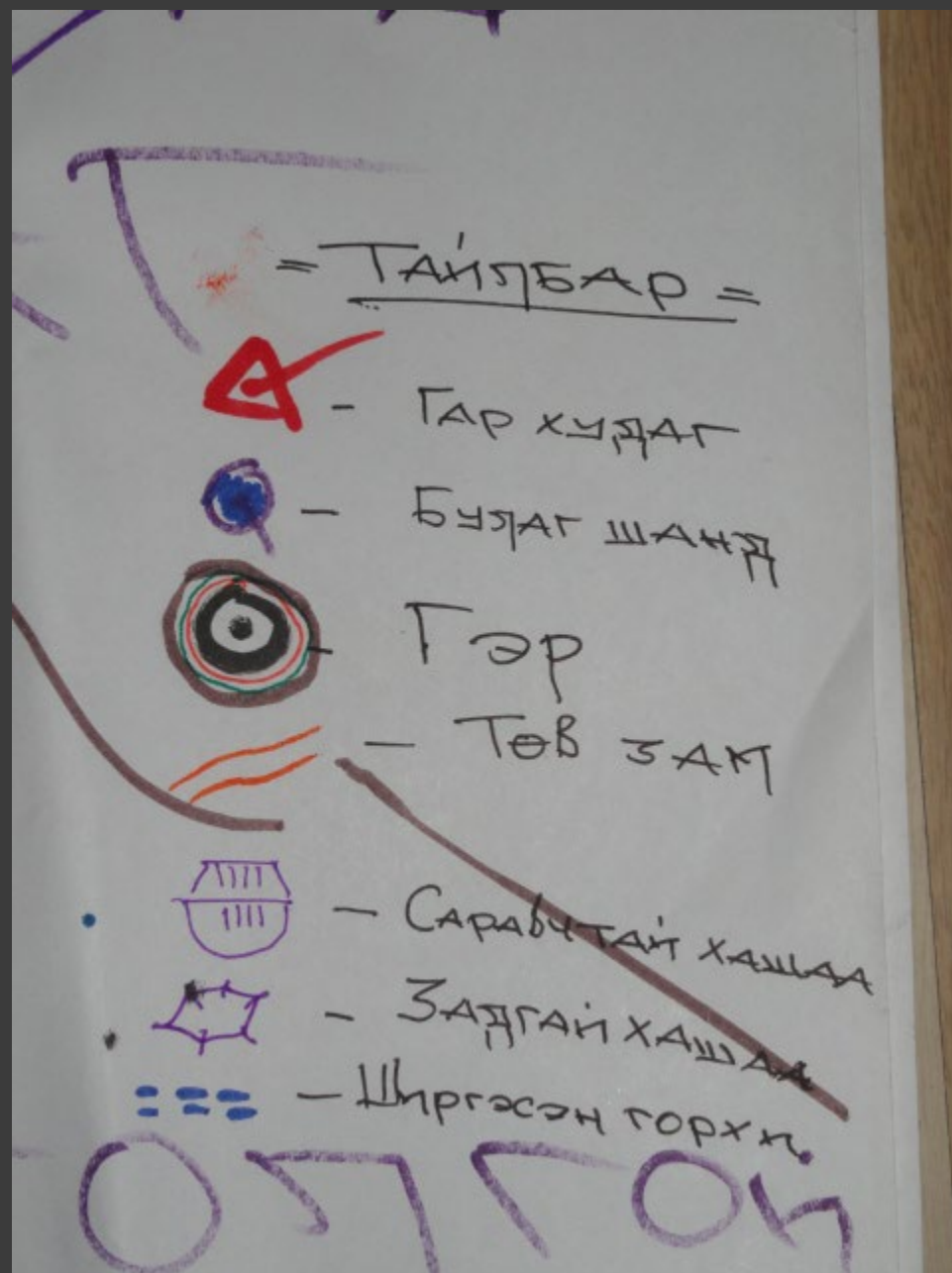
Participatory Mapping- Activity



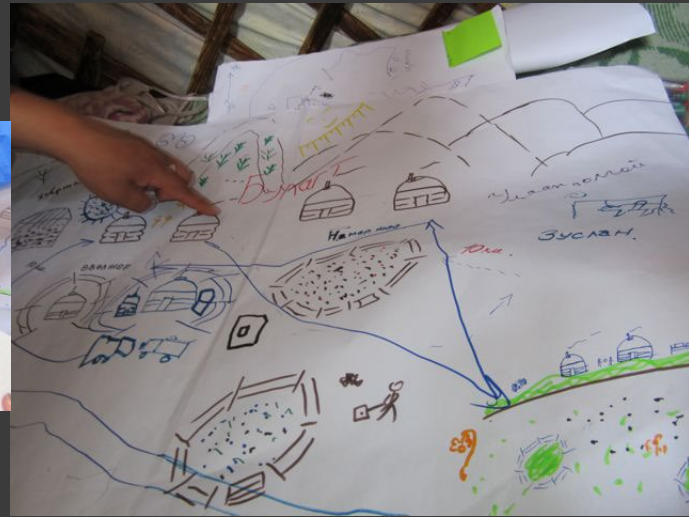
Draw your *Nutag*

Determining the legend:

- Symbols
- Colors
- What to map?

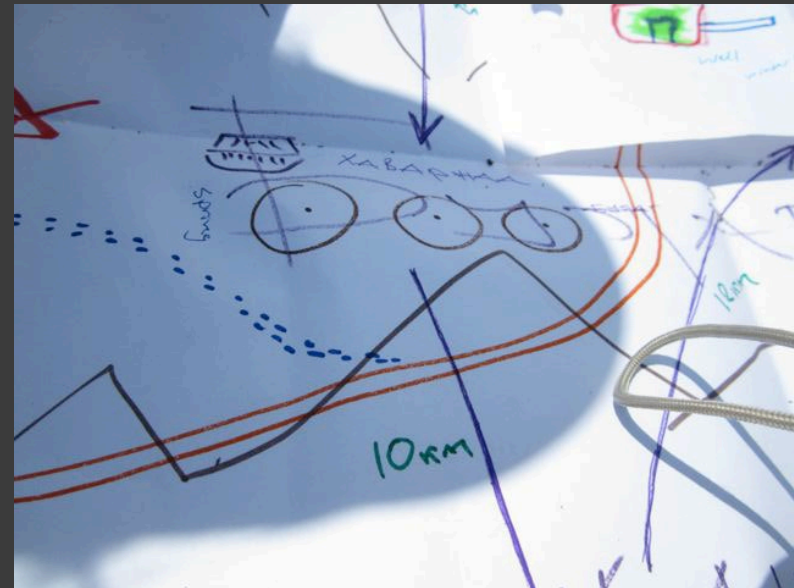


Participatory Mapping- Activity



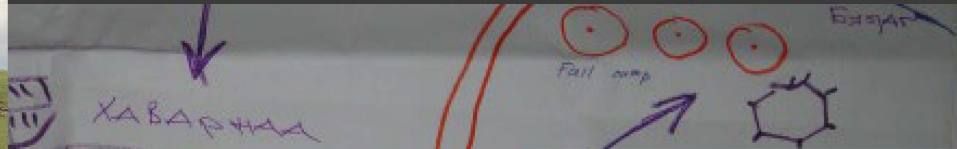
Tell a story: patterns and movement

Participatory Mapping- Site Visits



Visited sites:

- Clarified descriptions of pastures, direction, winter camp and summer camps
- GPS sites for georeferencing



GPS Points and Boundaries:

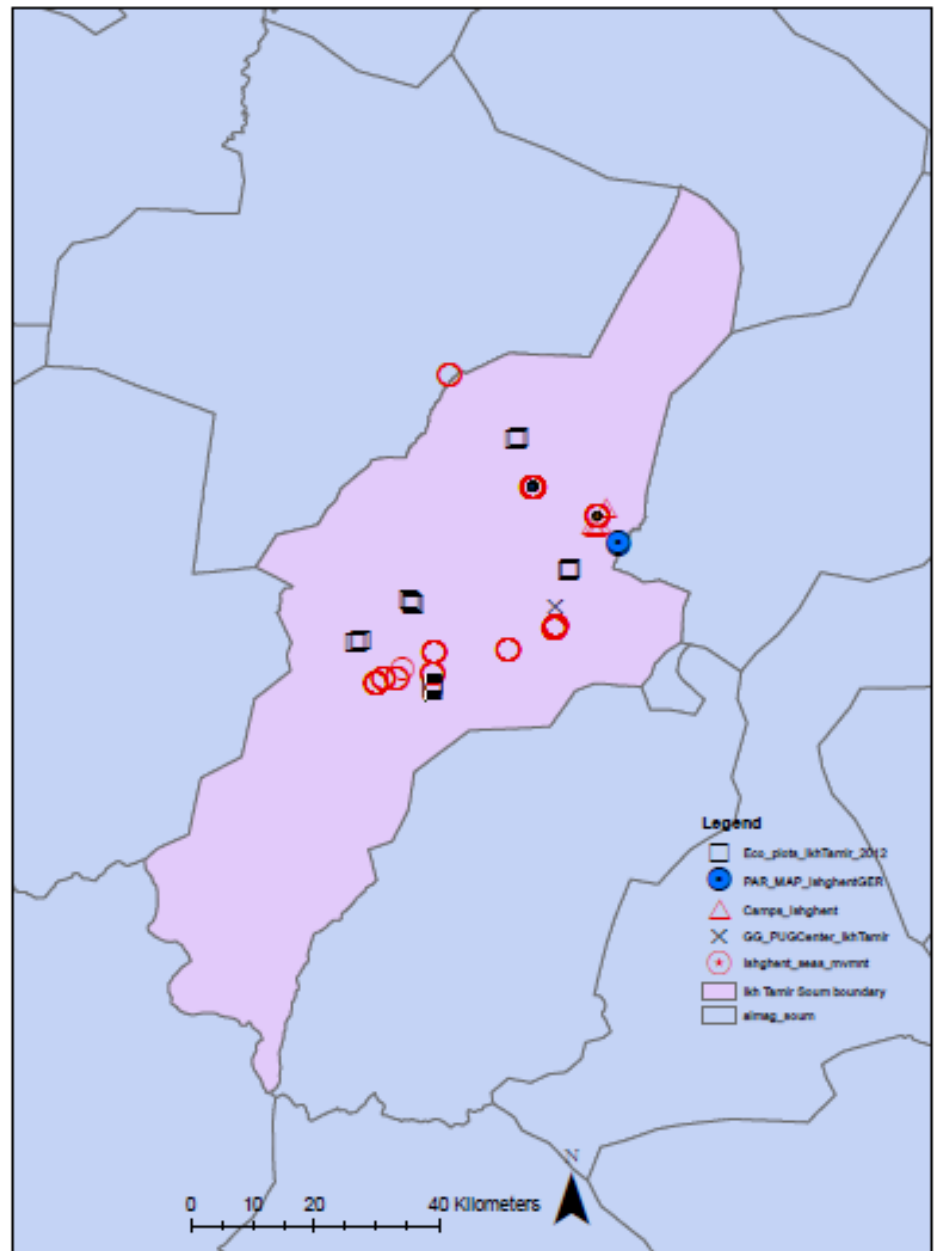
Ecological Plots



Participatory mapping sites



Winter Camps of Ishgent

Ishgent Seasonal Movement
(from household survey)**Overlay sites with HH survey****Overlay participatory maps on
DEMs and satellite images****Overlay sites with HH survey**
Create rose diagrams of distance

NEXT STEPS

- 1) **Geo-referencing** participatory based maps with GPS coordinates
- 2) **Overlaying the participatory-based maps** with GIS layers of MOR2's research, physical, institutional, and cultural landscapes
- 3) Interpreting the **spatial and non-spatial patterns** emerging from overlain GIS layers