

### Supplementary Material

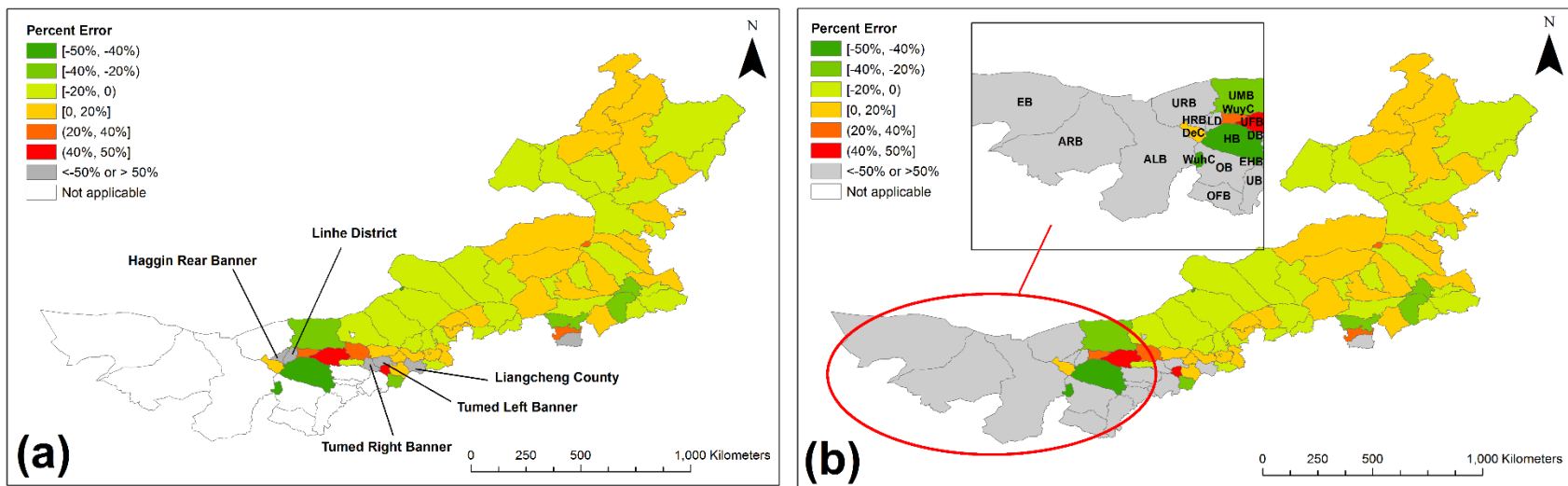
A remote sensing data based artificial neural network approach for predicting climate-sensitive infectious disease outbreaks: a case study of human brucellosis

**Table S1.** Description of remotely sensed, climatic, and socioeconomic variables used in the study.

Variables	Description	Formula
<b>Remotely sensed variables</b>		
EVImax	Maximum enhanced vegetation index	$EVI = 2.5 \times (NIR^a - RED) / (NIR + 6.0 \times RED - 7.5 \times BLUE + 1.0)$
EVImean	Mean enhanced vegetation index	
EVImin	Minimum enhanced vegetation index	
LSTmax	Maximum land surface temperature	
LSTmean	Mean land surface temperature	Split-window method
LSTmin	Minimum land surface temperature	
MIRmax	Maximum middle infrared radiation	
MIRmean	Mean middle infrared radiation	MODIS band 7
MIRmin	Minimum middle infrared radiation	
PRECmax	Maximum precipitation	
PRECmean	Mean precipitation	
PRECmin	Minimum precipitation	
Alt	Altitude (m)	
<b>Climatic variables</b>		
Bio1	Annual mean temperature (10°C)	
Bio2	Mean durnal range (10°C)	Mean of monthly (max temp – min temp)
Bio3	Isothermality	$Bio2/Bio7 \times 100$

Bio4	Temperature seasonality (10°C)	Standard deviation × 100
Bio5	Max temperature of warmest month (10°C)	
Bio6	Min temperature of coldest month (10°C)	
Bio7	Temperature annual range (10°C)	Bio5 – Bio6
Bio8	Mean temperature of wettest quarter (10°C)	
Bio9	Mean temperature of driest quarter (10°C)	
Bio10	Mean temperature of warmest quarter (10°C)	
Bio11	Mean temperature of coldest quarter (10°C)	
Bio12	Annual precipitation	
Bio13	Precipitation of wettest month	
Bio14	Precipitation of driest month	
Bio15	Precipitation seasonality	Coefficient of variation
Bio16	Precipitation of wettest quarter	
Bio17	Precipitation of driest quarter	
Bio18	Precipitation of warmest quarter	
Bio19	Precipitation of coldest quarter	
<b>Socioeconomic variables</b>		
Access	Accessibility	
Pop	Population density (persons/km <sup>2</sup> ) in 2000	
Cattle10	Cattle density (heads/km <sup>2</sup> ) in 2010	
Goat10	Goat density (heads/km <sup>2</sup> ) in 2010	
Sheep10	Sheep density (heads/km <sup>2</sup> ) in 2010	

<sup>a</sup>NIR: near infrared reflectance.



**Figure S1.** Percent errors of the predicted numbers of human brucellosis cases in 89 counties of Inner Mongolia, China, during (a) 2006-2008 and (b) 2009-2010.