



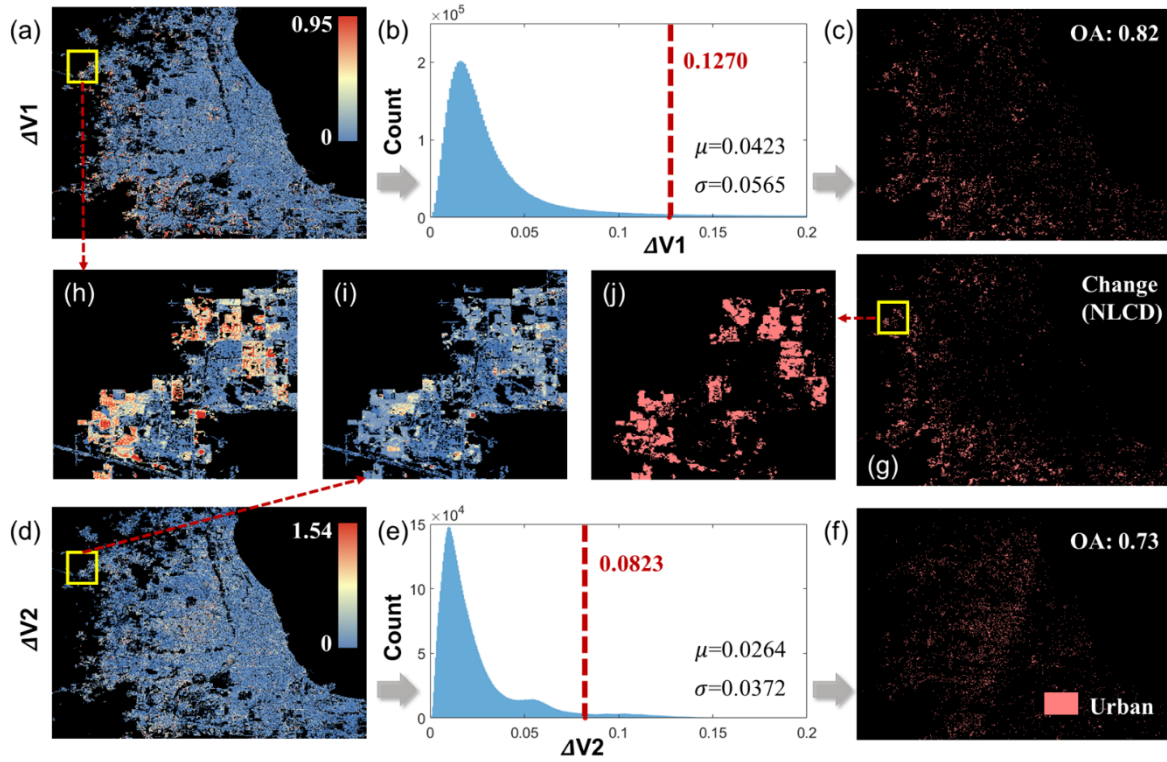
## *Supplement of*

# **A national dataset of 30 m annual urban extent dynamics (1985–2015) in the conterminous United States**

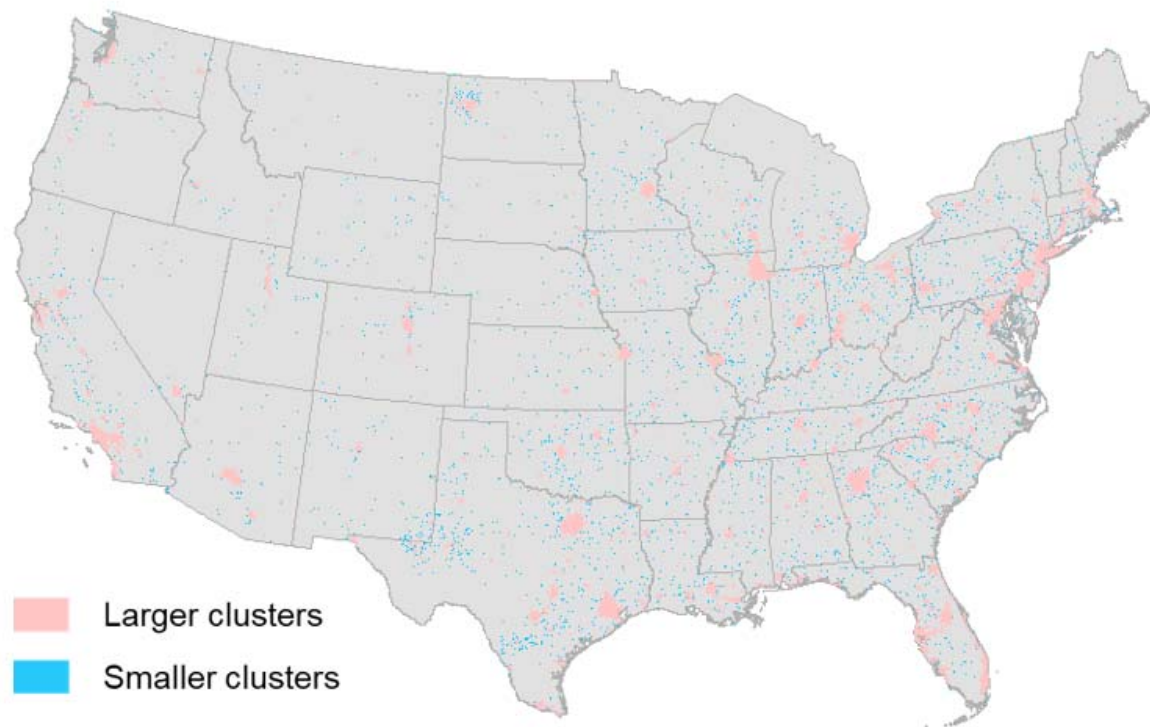
**Xuecao Li et al.**

*Correspondence to:* Yuyu Zhou (yuyuzhou@iastate.edu)

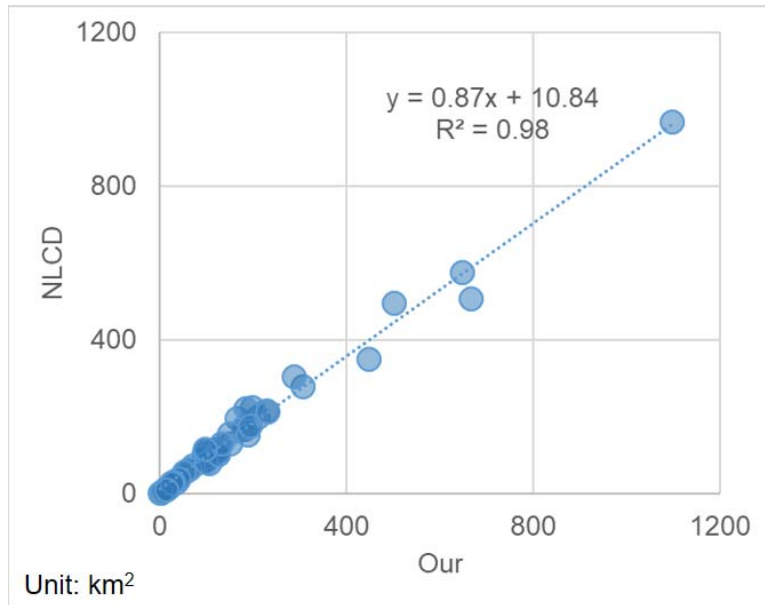
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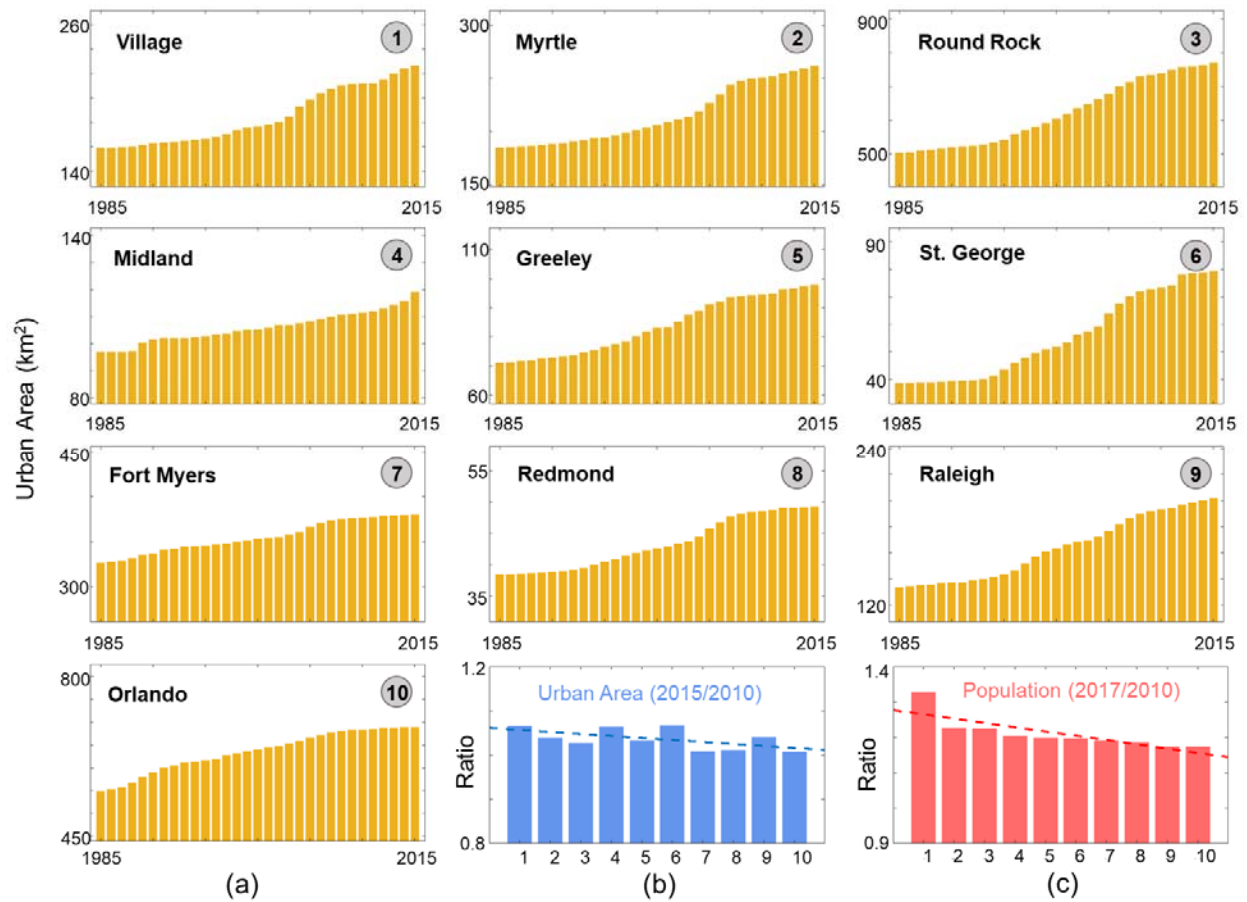
**Figure. S1.** Comparison of the performance of the change vector analysis (CVA) approach using three indicators (i.e., NDVI, MNDWI, and SWIR) and six spectral bands (i.e., B1, B2, B3, B4, B5, and B7) in the Chicago region during 2001-2011. Change vectors of  $\Delta V1$  (a) and  $\Delta V2$  (d) and their histograms (b and e) were derived from three indicators and six spectral bands, respectively. The detected change areas from  $\Delta V1$  and  $\Delta V2$  are presented in (c) and (f), respectively, and they were further compared with the reference data of NLCD (g). Enlarged examples are given in (h), (i), and (j), respectively. The dotted line in histograms (b and e) are determined thresholds.



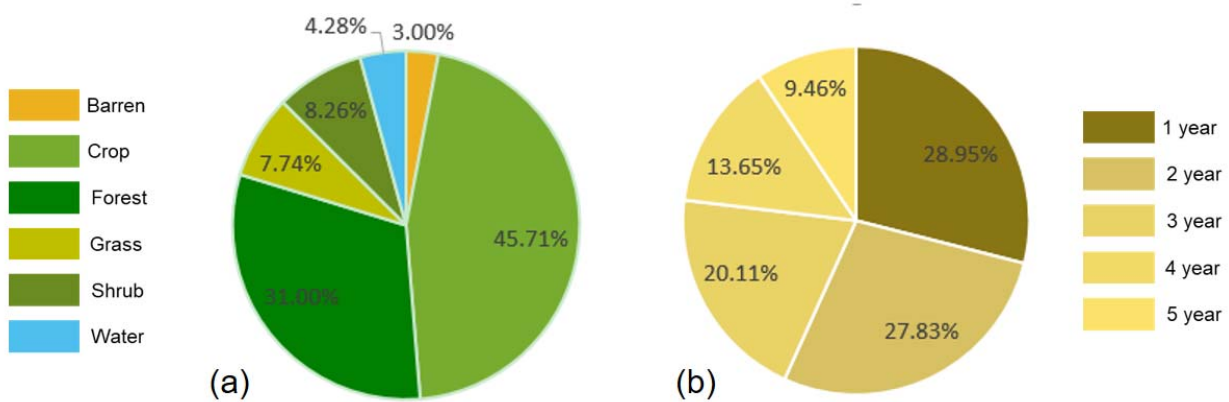
**Figure. S2.** An illustration of derived potential urban clusters with different sizes. Urban clusters were derived from the VIIRS data in 2015.



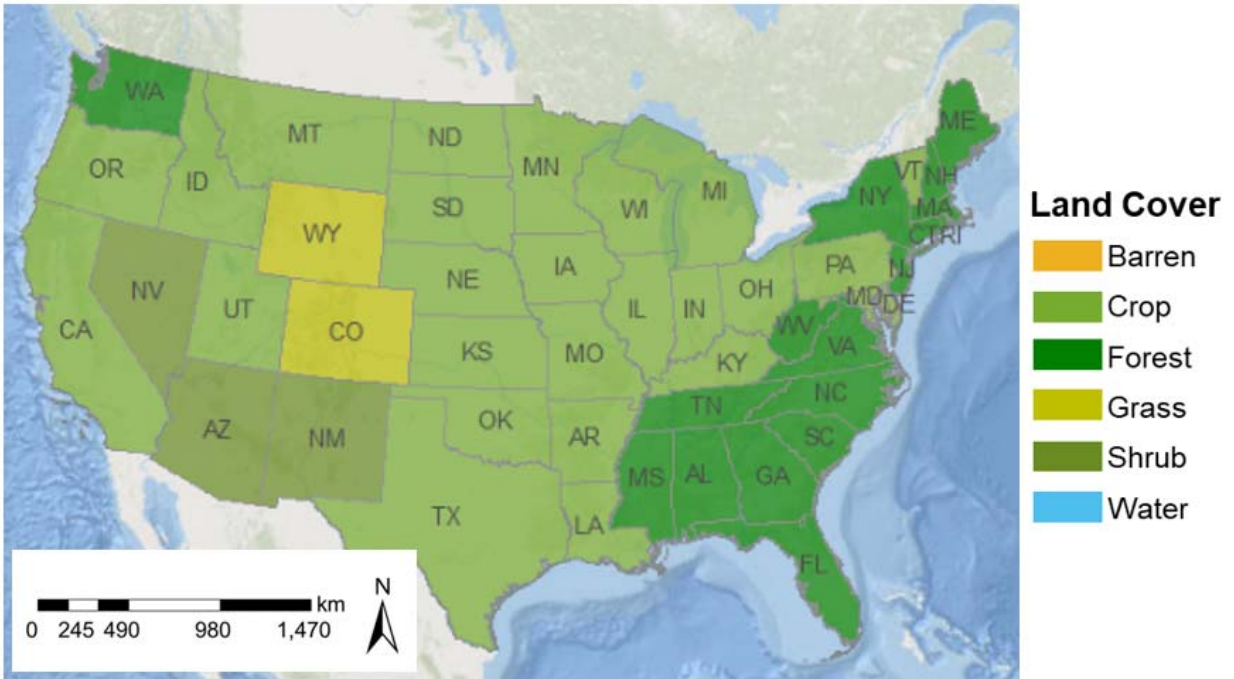
**Figure. S3.** Comparison of urban area growth between our result and NLCD during period 2001-2006 in US states.



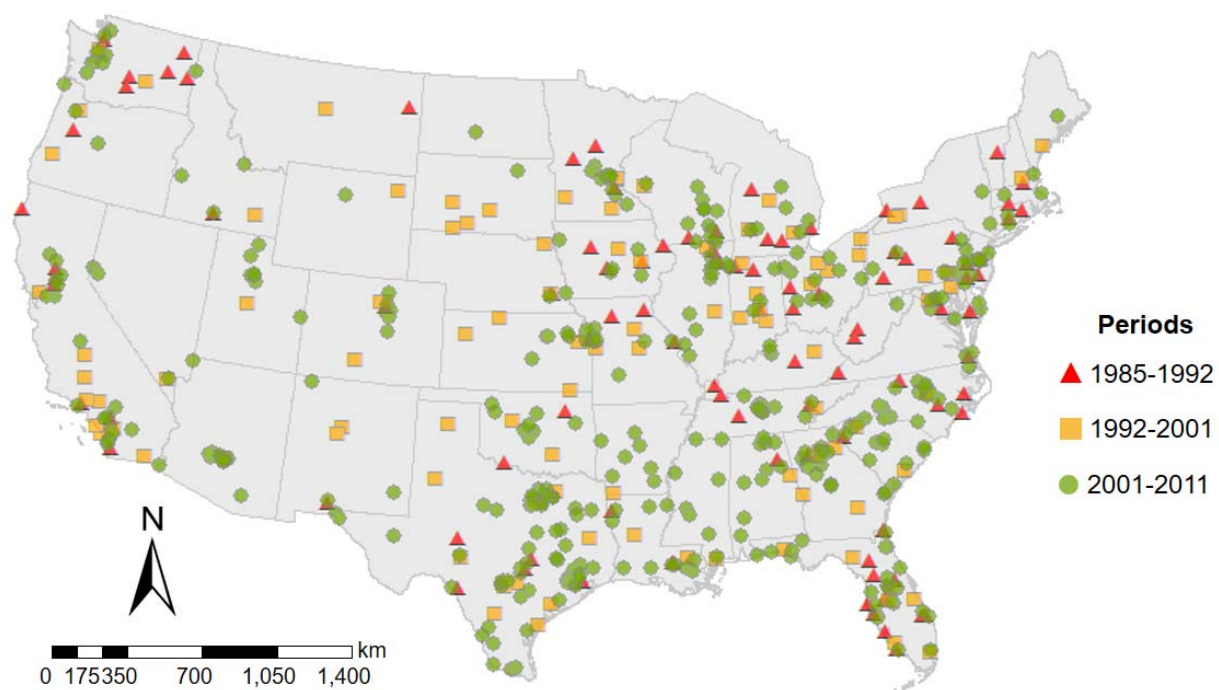
**Figure. S4.** Annual growth of urban areas in the top 10 cities over the past three decades (a) and the ratio of urban areas in 2015 (b) and population in 2017 (c) relative to the base year of 2010.



**Figure. S5.** Conversion sources of urbanized areas at the national level (a) and the duration of changes (b).

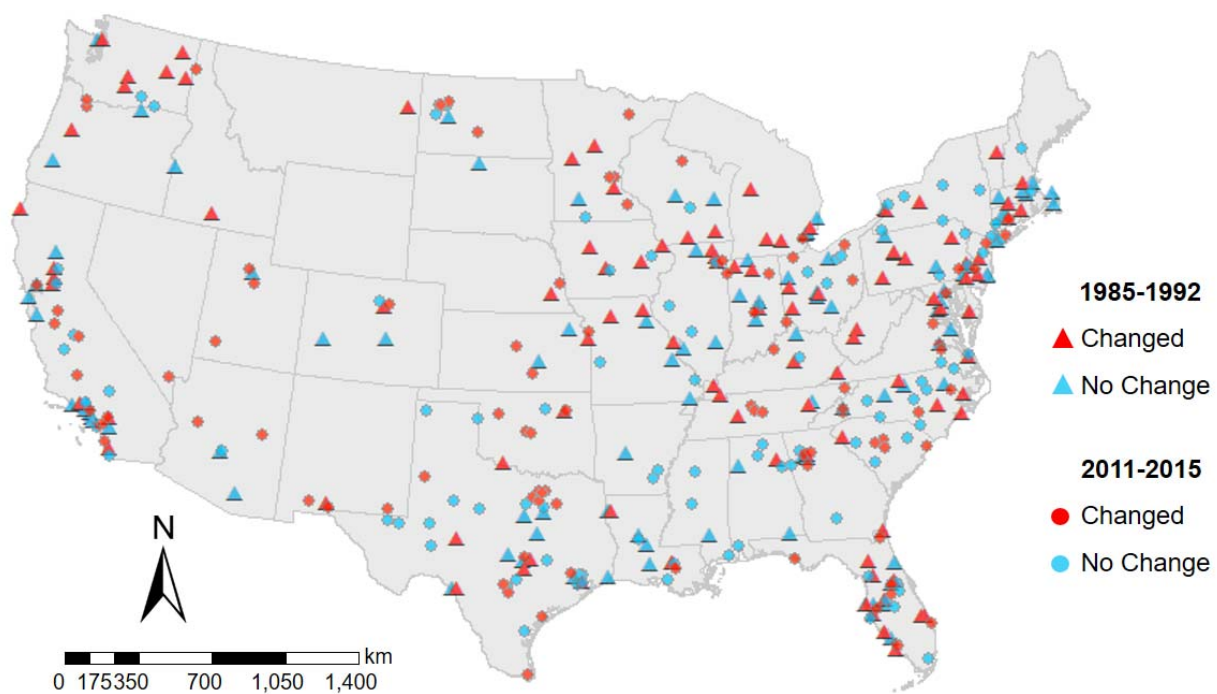


**Figure. S6.** The primary conversion sources of urbanized areas in US states during 1992-2015. Basemap data ©2019 Esri Inc.



**Figure. S7.** Samples for validating mapped urbanized years in the periods of B1 (1985-1992), B2 (1992-2001), and B3 (2001-2011).





**Figure. S8.** Samples for validating urbanized areas in the periods of B1 (1985-1992) and F1 (2011-2015).