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Fractional Vegetation Cover Dynamics of the dry valleys in Southwest China from 2000 to 2020

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The vegetation cover in China has changed significantly in the past 30 years, however evidence for vegetation cover dynamics in the dry valley region (DVR) is still lacking. This study aimed to detect fractional vegetation cover dynamics in DVR from 2000 to 2020 with MODIS products, and evaluate the effects of precipitation and hydropower construction projects on vegetation cover dynamics. The results showed that: (a) the long-term average annual fractional vegetation cover for the dry valley region, including the dry-hot valleys, dry-warm valleys and dry-temperature valleys were 0.452, 0.426, 0.504 and 0.446, respectively. Significant decreasing trend of annual FVC from 2000 to 2020 was reported for overall dry valley region. Specifically, significant reducing trends were mainly observed in the dry-hot valleys and dry-warm valleys that located in the west-south part of DVR, while significant growing trends in the dry-temperature valleys of the Min and Baishui Rivers; (b) Annual Precipitation and hydropower projects construction are two key factors that contributing to changes in annual FVC for valleys. The present study is probably the first report on vegetation cover dynamics and the effects of influencing factors in DVR of Southwest China, and helpfully for further scientific studies and restoration management practices in DVR, although more detailed studies for the changes of vegetation cover and its mechanism need to be done.