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**CHANGES IN SPATIAL STRUCTURE OF MANGROVE FOREST
ON CA MAU PENINSULA (SOUTH VIETNAM)
EVALUATED BY SATELLITE SURVEYS OF 30 YEARS INTERVAL**

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The changes in mangrove areas were calculated for thirty-year period (1989-2018) on the Ca Mau peninsula, South Vietnam. Landsat 4 TM and Landsat 8 scenes were used for spatial analysis of mangroves in 1989 and 2018 correspondingly. Spatial resolution of both sensors was 900 m² on pixel and the size of the analyzed area was 37574.25 ha. In 1989 mangroves covered 22999 ha and in 2018 only 18507 ha. Total loss of mangroves was 4492 ha with mean rate of decline 0.6% per year, which closely corresponds with recent estimated values of degradation of mangroves in SE Asia in general. However, simple comparison of total areas for 2 years does not reflect the spatial transformation: the disappearance of the old forests in one area and its appearance on the newly accumulated tidal flats. Comparison of the spatial mosaics for these 2 years evaluates greater figures of changes. Intact area comprised 10557 ha or less than 50% of mangroves in 1989. In the area of 12442 ha the mangroves disappeared completely, and then recovered on the area of 7950 ha. Along the decrease of mangrove vegetation in the studied area the rate of fragmentation increased drastically. The relative proportion of small patches (1-100 ha) increased about tenfold – from 4 to 34% of total mangrove coverage. The study showed that decrease of total area covered by mangroves, as a difference of total coverage between comparing years, does not provide sufficient measures for mangrove transformation rates. It does not include spatial and structural changes of mangrove forests. The area of intact mangroves used to be much smaller than total area at given year, and the structural changes affect the age structure of mangrove forests.

Keywords: mangroves, dynamics, Mekong Delta, Vietnam, Ka Mau.

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