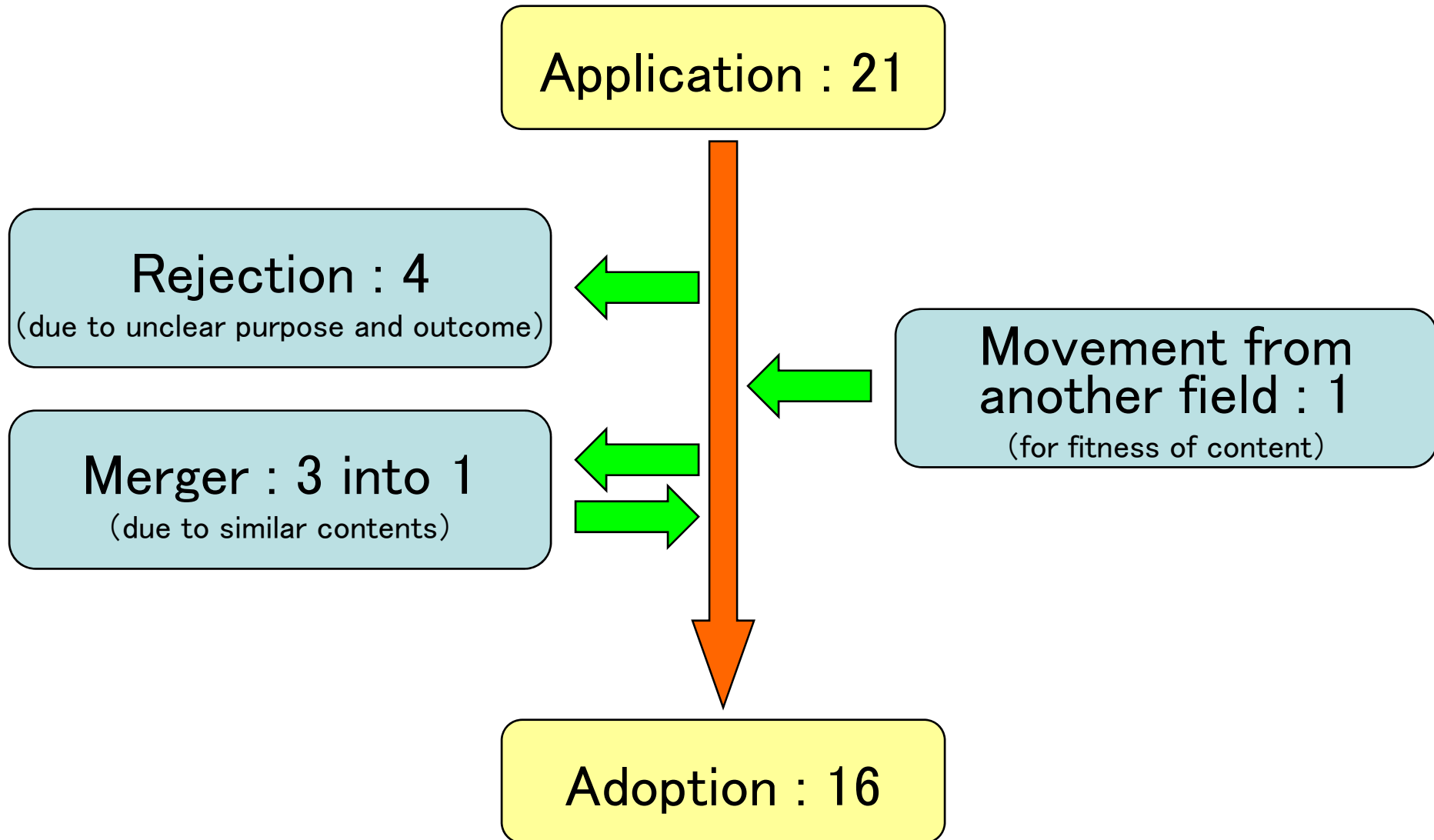


Application and Adoption of Research Plans for GOSAT Data Use



Outline of Adopted Research Plans



I. Research for the Atmosphere

1. Development of state-of-art algorithms for simultaneous retrieval of CO₂ and CH₄ column amounts using both NIR and LWIR channels of GOSAT
2. Development of an algorithm to retrieve the cloud/aerosol altitudes from the polarization of O₂ A-band at 0.76 μm
3. Validation of a LIDAR system for CO₂ measurements using CO₂ column amounts observed by GOSAT
4. Precise estimation of aerosol emissions using GOSAT/CAI data and a 3D global transport model, and study of the influence of aerosols on climate change based on the derived results

II. Research for Near Ground Surface

5. Derivation of a new vegetation index using GOSAT/CAI 380nm reflectance data, and evaluation of its validity
6. Monitoring of ground surface conditions using combined data of thermal infrared emissivity and visible–near infrared reflectivity of the surface and the vegetation index
7. Derivation of NDVI from TANSO/CAI data, and its application to land observations such as phenology monitoring of the terrestrial biosphere and secular change in snow/ice areas
8. Estimation of CO₂ exchange between the atmosphere and the terrestrial ecosystem in Alaska and East Asia
9. Analysis of atmospheric CO₂ variations associated with land use, land cover and the terrestrial biosphere in China and Northwest Asia (2 research plans)

10. Analysis of CH₄ emissions from rice paddies in Asia
11. Preparation of an index indicating the combustion state of forest fires, and its application to estimation of CO₂ and CH₄ emissions
12. Development of an early detection system for natural gas leakage from pipelines in Alaska and Siberia
13. Evaluation of applicability of GOSAT data for monitoring CO₂ and CH₄ emissions from tailing ponds and upgrader operations in the oil sand production area, Alberta, Canada
14. Estimation of anthropogenic CO₂ and CH₄ emissions from large point sources such as metropolitan and industrial areas using a high-resolution inverse model
15. Estimation of anthropogenic CO₂ emissions from spatial CO₂ column amount distributions around big cities, and examination of thermal environments of big cities