Application and Adoption of Research Plans for GOSAT Data Use

Application : 21

Rejection : 4
（due to unclear purpose and outcome）

Movement from another field : 1
（for fitness of content）

Merger : 3 into 1
（due to similar contents）

Adoption : 16
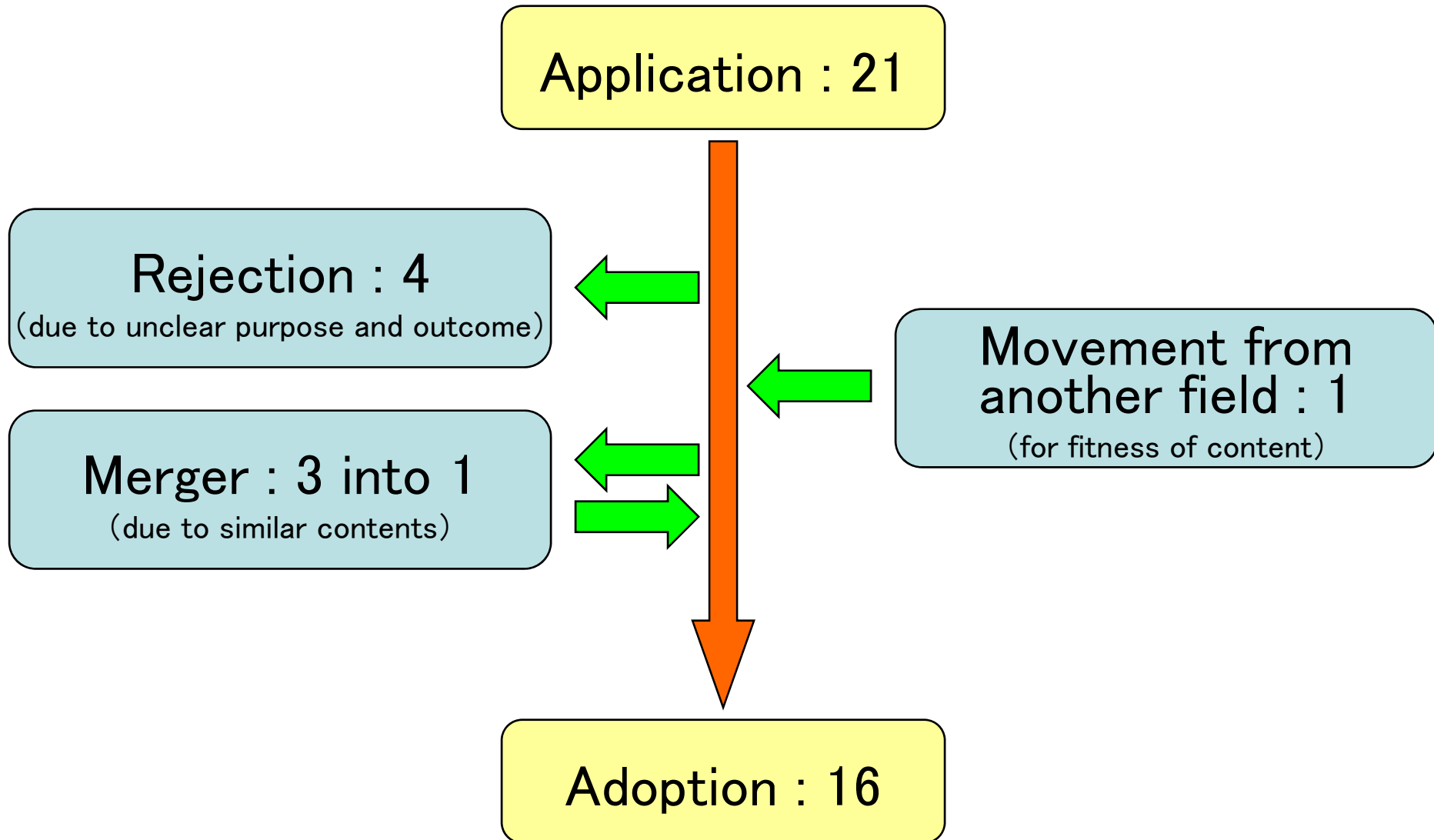
Outline of Adopted Research Plans

I. Research for the Atmosphere

1. Development of state-of-art algorithms for simultaneous retrieval of CO_2 and CH_4 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 O_2 A-band at 0.76 μm

3. Validation of a LIDAR system for CO_2 measurements using CO_2 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 CO_2 exchange between the atmosphere and the terrestrial ecosystem in Alaska and East Asia

9. Analysis of atmospheric CO_2 variations associated with land use, land cover and the terrestrial biosphere in China and Northwest Asia (2 research plans)

10. Analysis of CH_4 emissions from rice paddies in Asia

11. Preparation of an index indicating the combustion state of forest fires, and its application to estimation of CO_2 and CH_4 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 CO_2 and CH_4 emissions from tailing ponds and upgrader operations in the oil sand production area, Alberta, Canada

14. Estimation of anthropogenic CO_2 and CH_4 emissions from large point sources such as metropolitan and industrial areas using a high-resolution inverse model

15. Estimation of anthropogenic CO_2 emissions from spatial CO_2 column amount distributions around big cities, and examination of thermal environments of big cities