Description of files at http://doi.pangaea.de/10.1594/PANGAEA.841137

Planimetric flow convergence C is here defined as the local rate of change of flow direction θ (measured clockwise from grid Y-axis in radian) with respect to distance left-perpendicular to flow. Therefore C — notably its negative values, which indicate diverging flow-line geometry — is not to be confused with vector divergence ('Div' operator) of the velocity vector field. In the archive, the first five files contain the estimated fields of flow convergence C, flow direction θ_K and flow-orthonormal strain rate (the product of C and flow speed U) of ice flow at the surface of the Antarctic Ice Sheet, and kriging error estimates for the first two fields. As described by the paper associated with this archive (Ng, 2015), these fields have been computed from the Interferometric Synthetic Aperture Radar (INSAR)-based surface velocity map of Antarctica (Rignot et al., 2011a & 2011b) by a kriging procedure. See Methods of Ng (2015) for details as well as for the properties of C and θ_K and definitions of their kriging standard deviations σ_c and σ_θ. The re-estimated (kriged) flow direction field $\theta_K(X, Y)$ is a smoothed version of $\theta(X, Y)$ derived directly from INSAR velocities. All fields are presented at 450-m resolution on the south-polar stereographic projection grid with secant plane at 71 degrees south. The three remaining files are a gridded binary mask (found from INSAR velocities) showing where ice flow speed U exceeds 20 m/yr, a browse image of the convergence map, and a browse image of the map of flow-orthonormal strain rate. As pointed out by Ng (2015), convergence and strain-rate estimates for all regions on the ice sheet where U (approximately) < 20 m/yr are unreliable, because errors in the INSAR velocity measurements attain this speed value (Rignot et al. 2011a), substantially corrupting the kriged ice-flow directions and their spatial gradients (which yield the convergence). The mask is useful for excluding these regions. Convergence and strain-rate estimates are unreliable also at numerous isolated grid locations that inherit errors and artefacts from the INSAR velocity compilation.

References:
Rignot, E., Mouginot, J. and Scheuchl, B. (2011a) Ice flow of the Antarctic Ice Sheet. Science 333, 1427-1429. doi: 10.1126/science.1208336
Rignot, E., Mouginot, J. and Scheuchl, B. (2011b) MEaSUREs InSAR-Based Antarctica Ice Velocity Map. Boulder, Colorado USA: NASA DAAC at the National Snow and Ice Data Center. doi:10.5067/MEASURES/CRYOSPHERE/nsidc-0484.001 [Weblink: http://nsidc.org/data/nsidc-0484/]