Although we observe polygonal microstructure and apparently no strong deformation (A), if we compare with the shear strain rate field (B) and finite strain (C) we can identify an heterogeneous strain distribution with development of high strain-rate bands. The strain heterogeneity is produced by the strong slip anisotropy of ice and it is masked by dynamic recrystallization.

Conclusions

- The simulation results show a strong effect of the recrystallization on the final microstructure. Dynamic recrystallization masks the strain rate and finite strain heterogeneity resulting from the strong slip anisotropy of the ice. This reveals the importance of strain rate and dynamic recrystallization in controlling the resulting microstructure.

- The strong effect of recrystallization on the microstructure does not significantly modify the single-maximum pattern of cases, that are distributed all over the sliding directions in both pure and simple shear cases.

- In pure and simple shear simulations, dynamic recrystallization produces larger and more experimental grains, with smooth boundaries.