Management Group ACCORD

National Institute of Meteorology

NWP Activities : microphysics

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Outline

1. Introduction

2. Impact of LIMA scheme on AROME-Tunisia microphysics: Methodology

3. Impact of LIMA scheme on AROME-Tunisia microphysics : Some results

1. Introduction

The aim of this line of work at the INM is to improve the forecast of localized convective situations and hailstorms and provide BETTER :

- Quantitative information: in particular rain, hail, wind gusts

- Qualitative information : spatiotemporal estimation of phenomena

1. Introduction

Sensitivity studies on different microphysical schemes

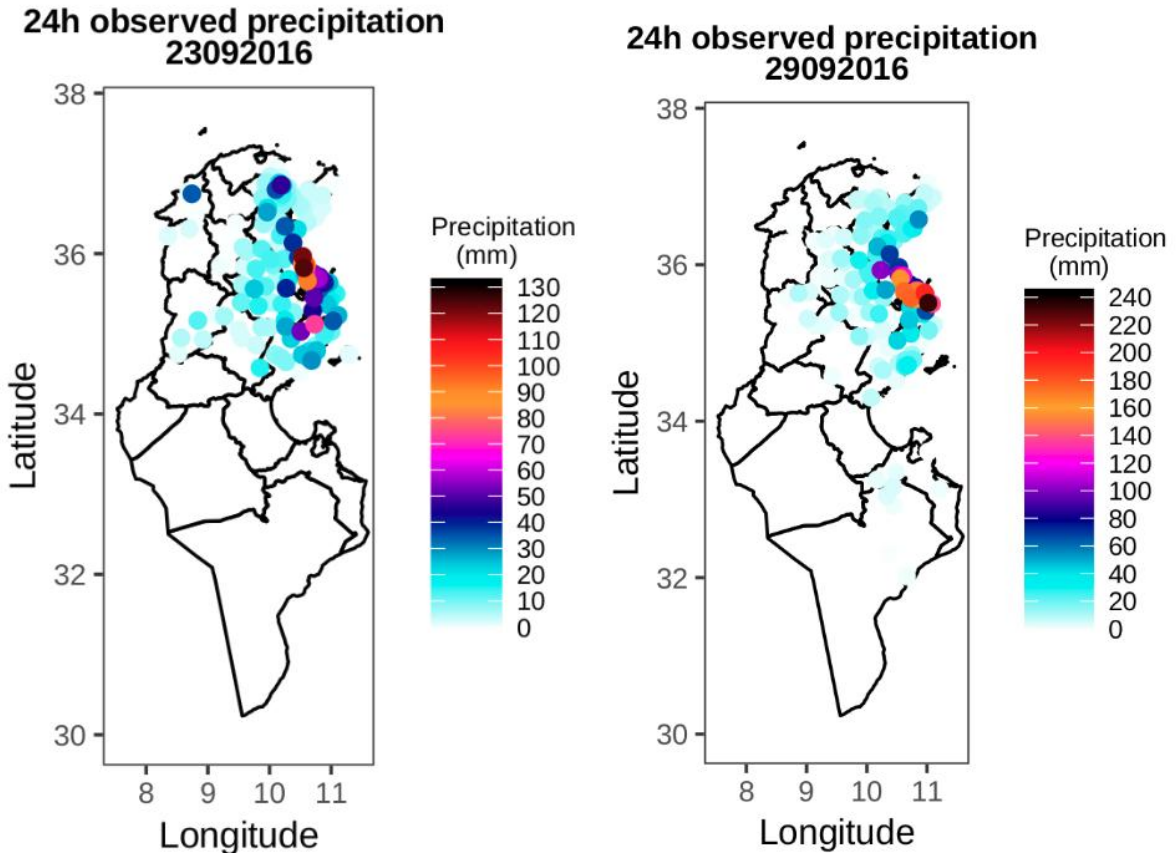
- ICE 3 : Default scheme on AROME-Tunisia

- ICE 4 : Improve hail forecast : Improve spatio-temporal estimation ?

- LIMA : Consider interaction between aerosol concentration and hydrometeors : decrease the underestimation of rainfall by AROME in the case of Saharan lows?

2. Impact of LIMA on AROME microphysics: Methodology

We were interested to convective situations marked by strong density currents, falls of hail and underestimated precipitation by AROME coinciding with Saharan lows



2. Impact of LIMA on AROME microphysics: Methodology

Intercomparaison of different configurations :

Experience	Cycle	Description
Reference	AROME-Tunisia (1.3km, L90) cy45t1_main + ICE3	
Exp1	AROME-Tunisia (1.3km, L90) cy45t1_main + Modified LIMA scheme	Including developments made to LIMA scheme by Benoit Vié process of homogeneous freezing of condensation nuclei LHHONI_LIMA=T
Exp2	AROME-Tunisia (1.3km, L90) cy45t1_main + Modified LIMA scheme +LHHONI_LIMA=F	non homogeneous freezing LHHONI_LIMA=F To act on the estimation of ice production on the cloud

2. Impact of LIMA on AROME microphysics: Methodology

Configuration AROME-Tunisia

Resolution : 1.3Km

Vertical levels : 90

Number of points in the domain :
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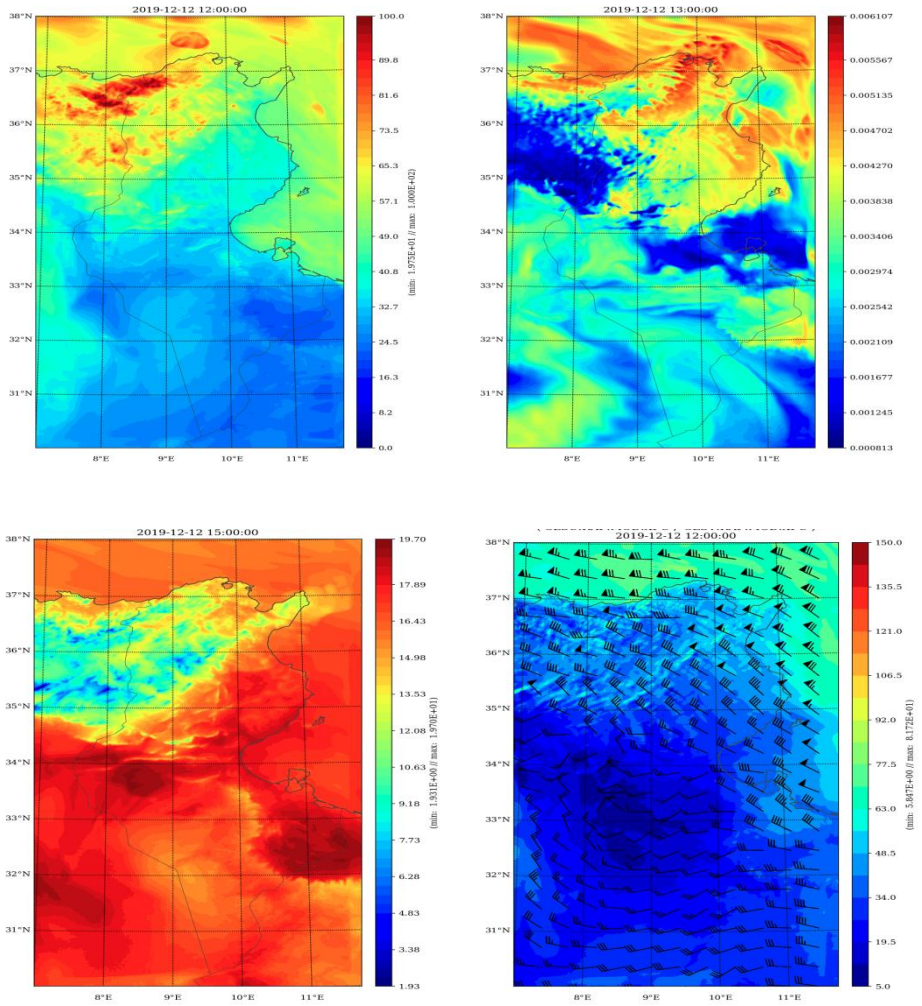
Domain coordinates :
SW (lon °- lat °)
NE (lon ° - lat °)

Time Step : 45s

Forecast range : 48h

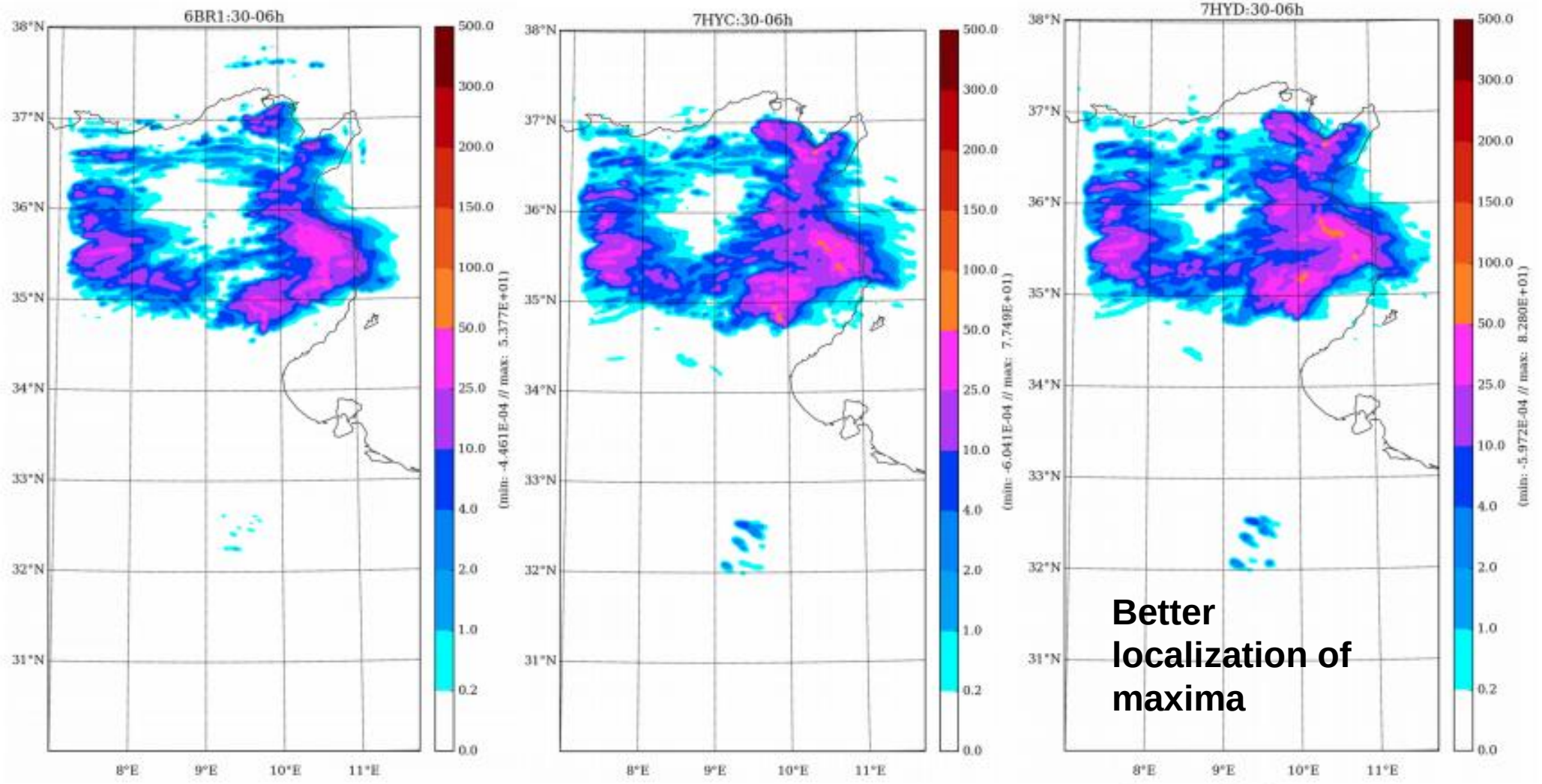
LBCs : ARPEGE

Cycle :Cy45t1_main



4. Impact of LIMA on AROME microphysics: Some results

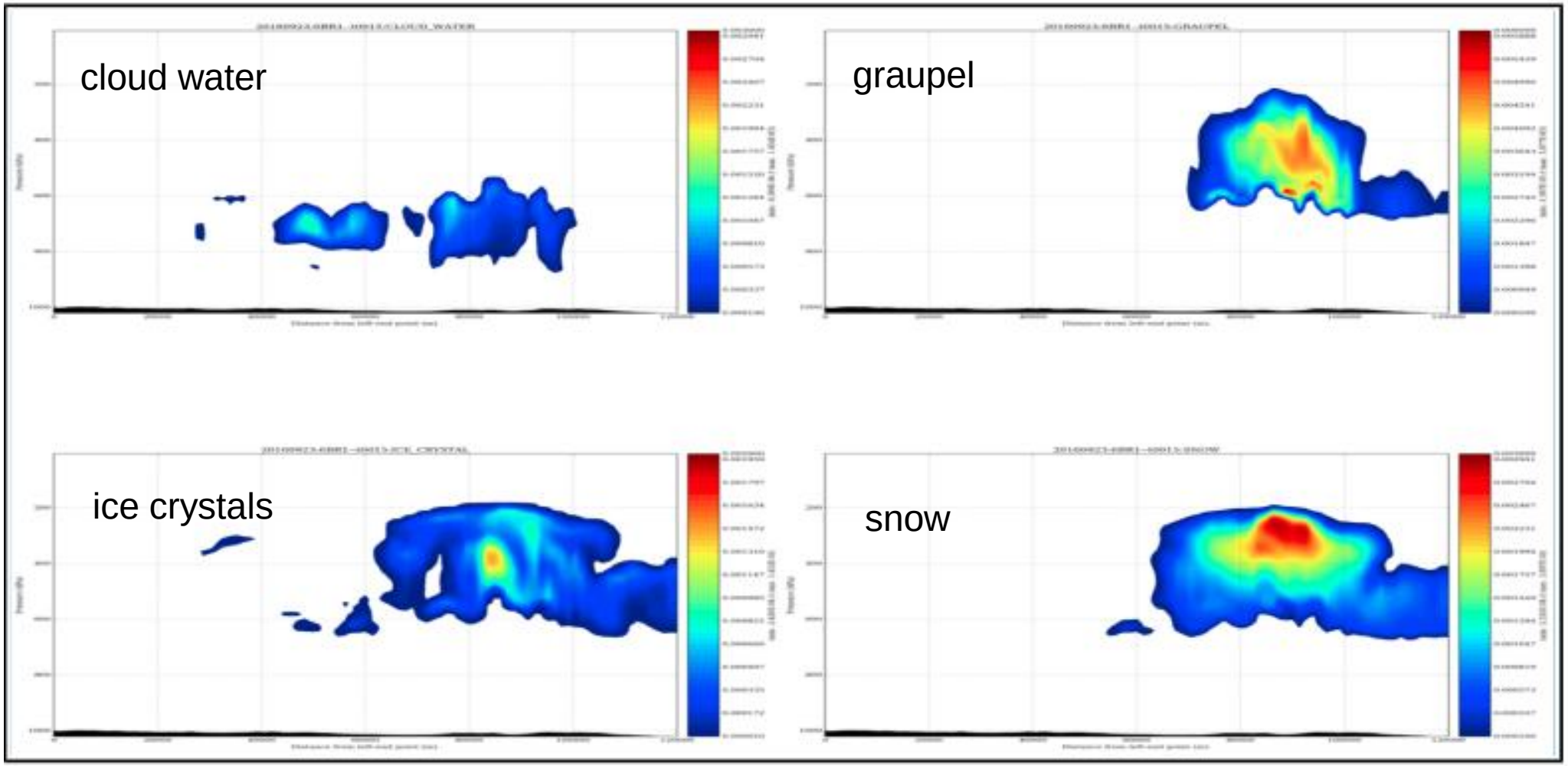
23/09/2016



Reference **Exp1** **Exp2**

4. Impact of LIMA on AROME microphysics: Some results

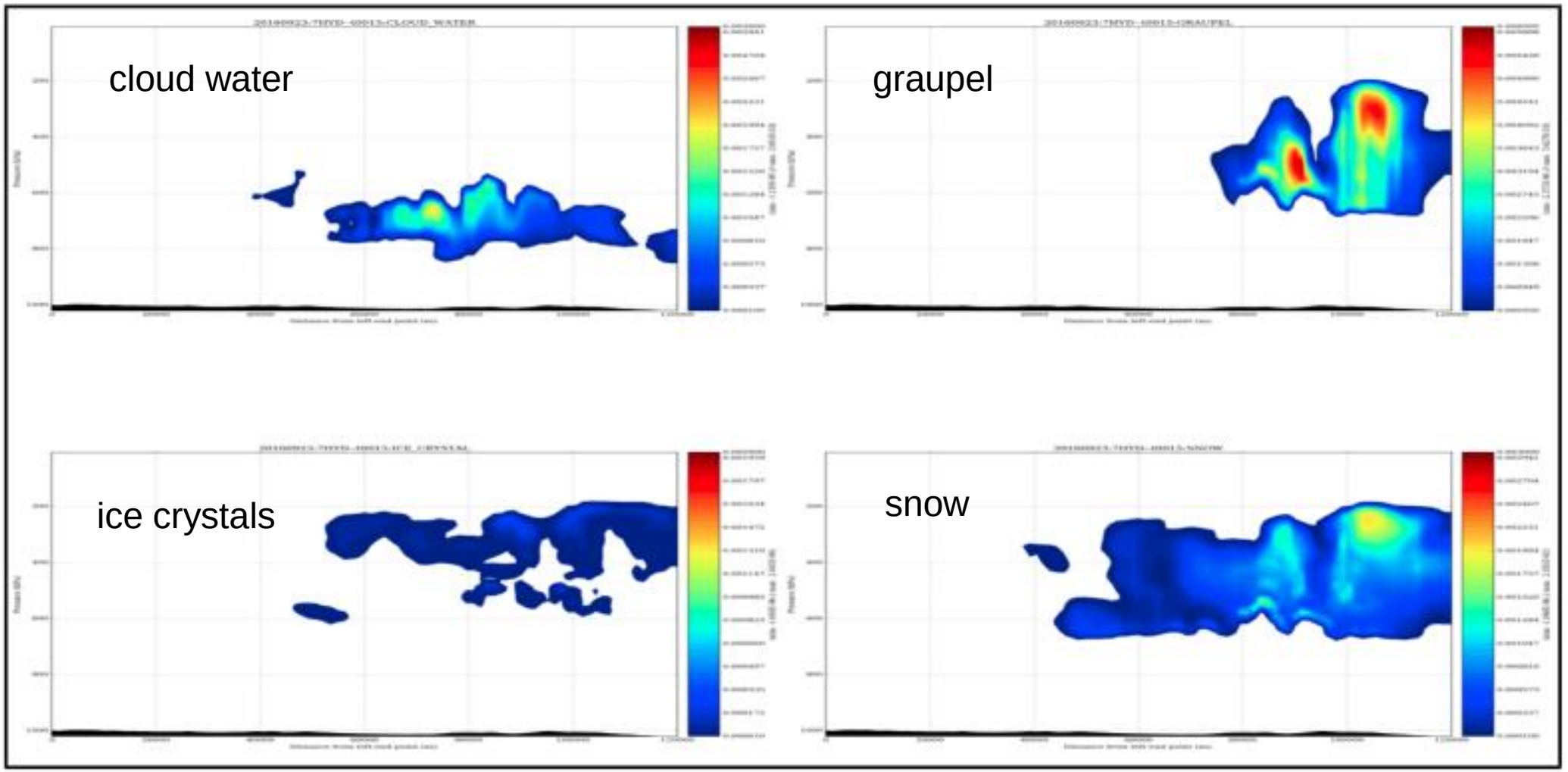
23/09/2016
Ref



Vertical sections of hydrometeors at 3 p.m.

4. Impact of LIMA on AROME microphysics: Some results

23/09/2016
Exp2



Vertical sections of hydrometeors at 3 p.m.

Thank you

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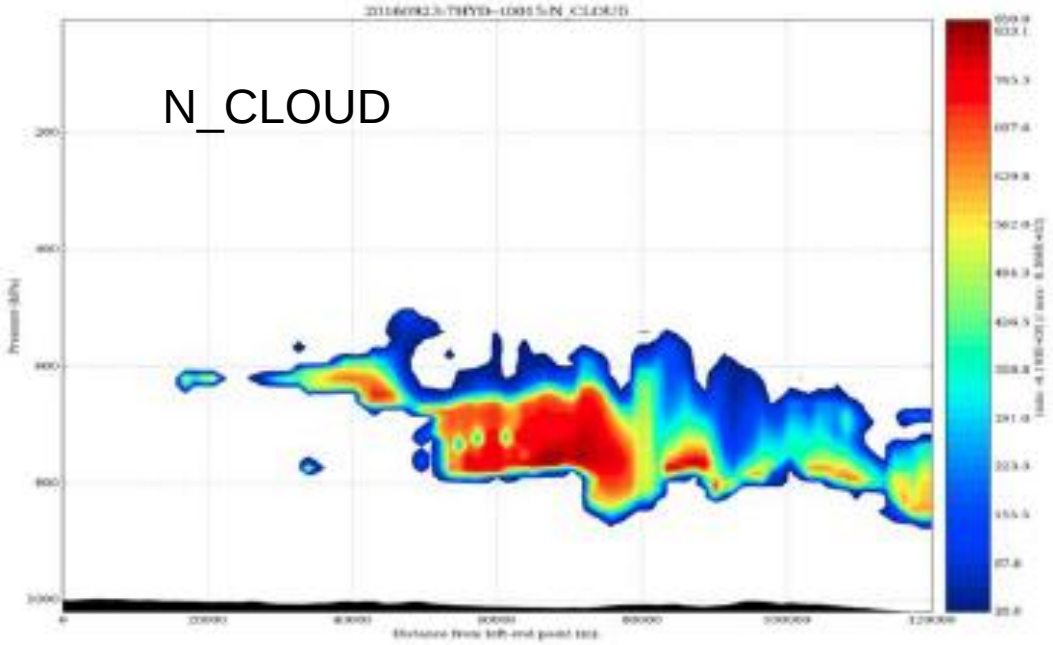
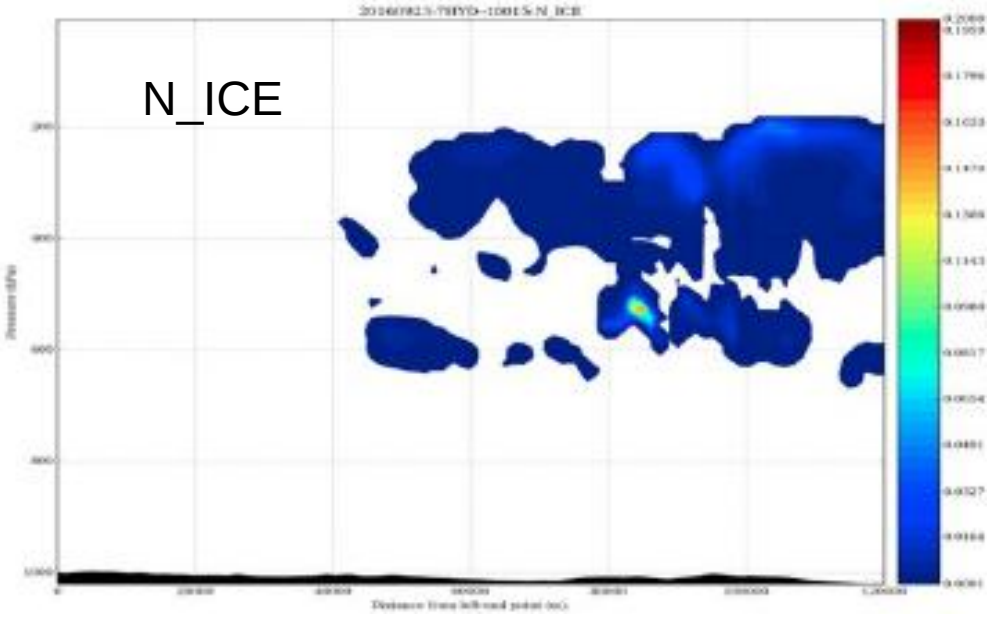
4. Impact of LIMA on AROME microphysics: Some results





Vertical sections of LIMA fields at 3 p.m.