Webcams - a diagnostic tool for forecaster

Jadran Jurković

Outlook

Introduction

Webcams in Croatia control

Cases

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Conclusion

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Introduction

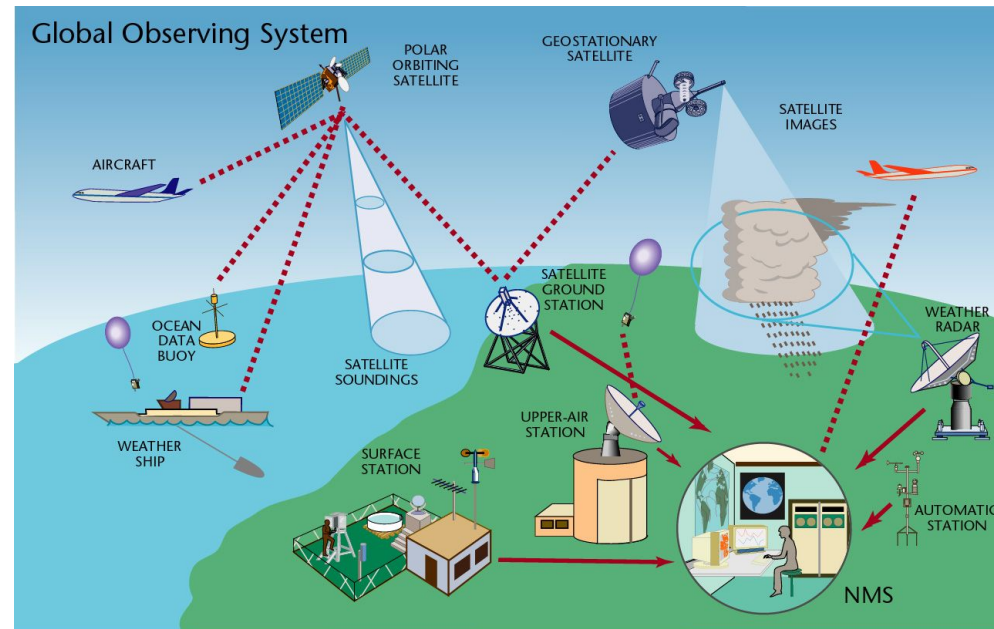## Global Observing System (GOS)

- constantly growing
- regular report e.g. SYNOP
  - coded

Webcams

- complement GOS
- surface observation

WMO 2017

- cloud Atlas

"GOS is an extremely complex undertaking, and it is perhaps one of the most ambitious and successful instances of international collaboration of the last 100 years."

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Introduction

Sandnes (2011) fig 4

Automatically Generate Interactive Weather Reports based on Webcam Images

a) Sunny scene
b) Many visible edges
c) Light fog
d) Fewer vague edges
e) Heavy fog
f) No visible edges

Webcams used in Croatia control

- Usually on tops of mountains or hills 500-1500m
- Primary purpose to monitor weather along routes
- Estimate if the route is closed for aviation (ceiling or visibility)
- Also to monitor changes in clouds and other weather parameters
- at each site view N - E - S - W

CROATIA | MET
CONTROL | DIVISION
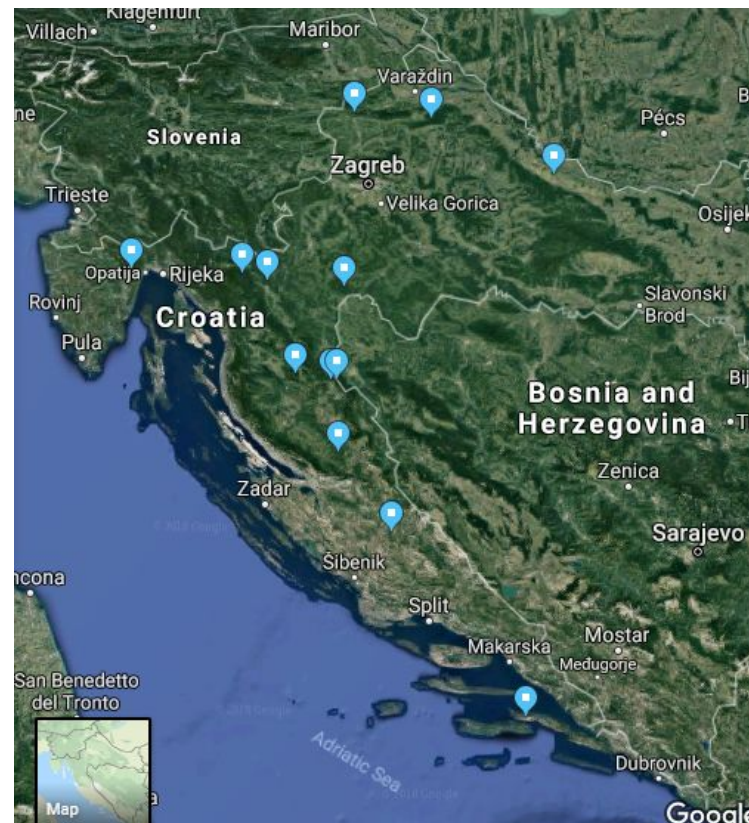
| OPMET | Warnings | Charts | Satellite and Radar | Web Cameras | Additional MET Products | NWP | Observations and Analysis | Climatology | eGAFOR Project |

Overview | Map | Brezovica | Celevac | Kalnik | Korcula | Korenica | Licka Pljesivica | Mirkovica | Ogulin | Petrova Gora | Promina | Stipanov Gric | Ucka | Virovitica | Airport cameras

Bresovica sjever | Bresovica istok | Bresovica jug | Bresovica zapad
Kalnik sjever | Kalnik istok | Kalnik jug | Kalnik zapad

Virovitica sjever | Virovitica istok | Virovitica jug | Virovitica zapad
Petrova Gora sjever | Petrova Gora istok | Petrova Gora jug | Petrova Gora zapad

Mirkovica sjever | Mirkovica istok | Mirkovica jug | Mirkovica zapad
Učka sjever | Učka istok | Učka jug | Učka zapad

Stipanov Grič sjever | Stipanov Grič istok | Stipanov Grič jug | Stipanov Grič zapad
Ogulin sjever | Ogulin istok | Ogulin jug | Ogulin zapad

Lička Plješivica sjever | Lička Plješivica istok | Lička Plješivica jug | Lička Plješivica zapad
Korenica sjever | Korenica istok | Korenica jug | Korenica zapad

Čelevac sjever | Čelevac istok | Čelevac jug | Čelevac zapad
Promina sjever | Promina istok | Pr

Korčula sjever | Korčula istok | Korčula jug | Korčula zapad

6

Case 1   8.3.2018. North Istria

Ucka1 2018-03-08 07:42:36

HIGH — dry

MID — some moisture, relatively stable

LOW — drier

SABL — high rel. humidity SABLh<600m AMSL St tops differs => not pronounced inversion => transforming

Dolomites, Italy >200km

Gloria

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Case 1

Different layers

Transforming to SABL CABL

Cu hum

Condensation level (LCL) growth

   11:30 LCL> 1400m
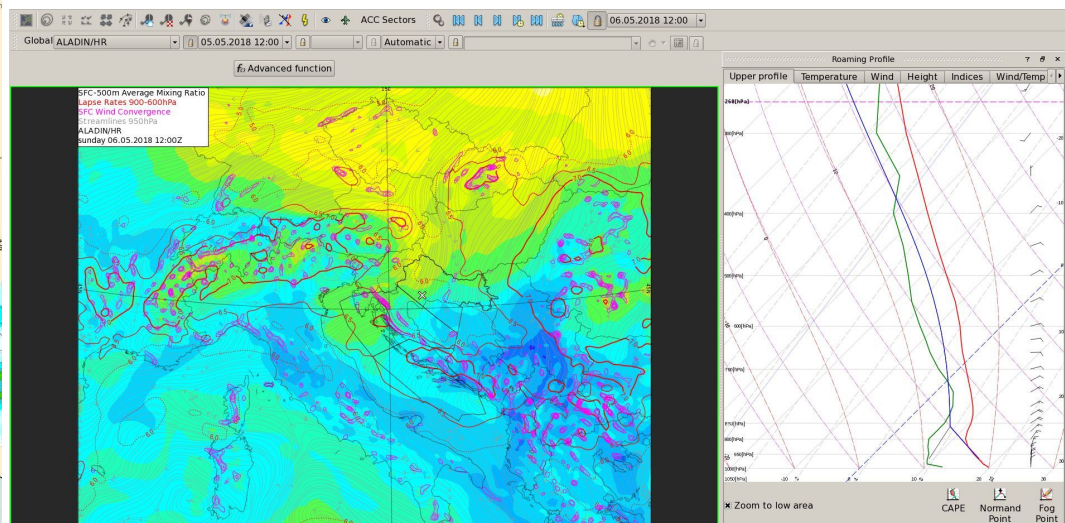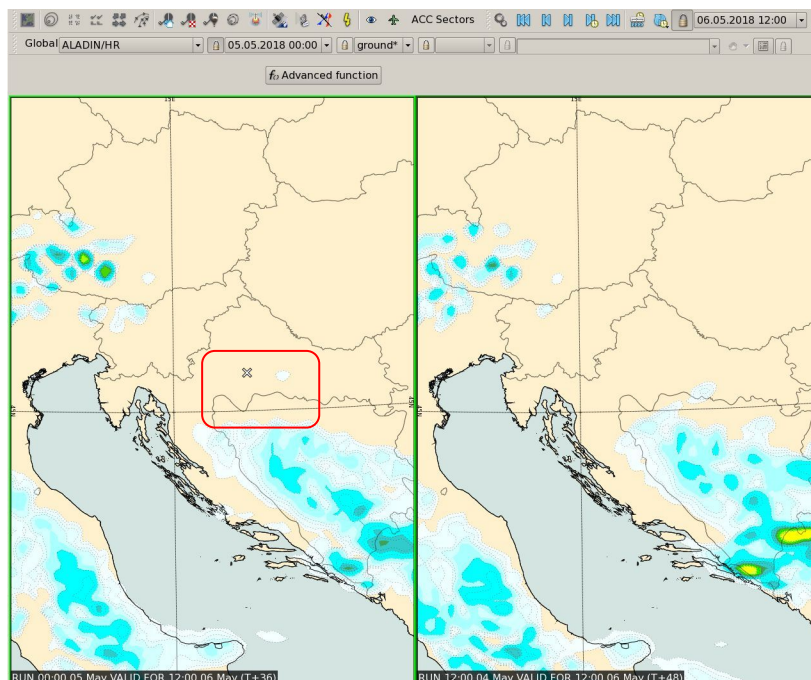
Cu med

   still growing (different height of Cu tops)
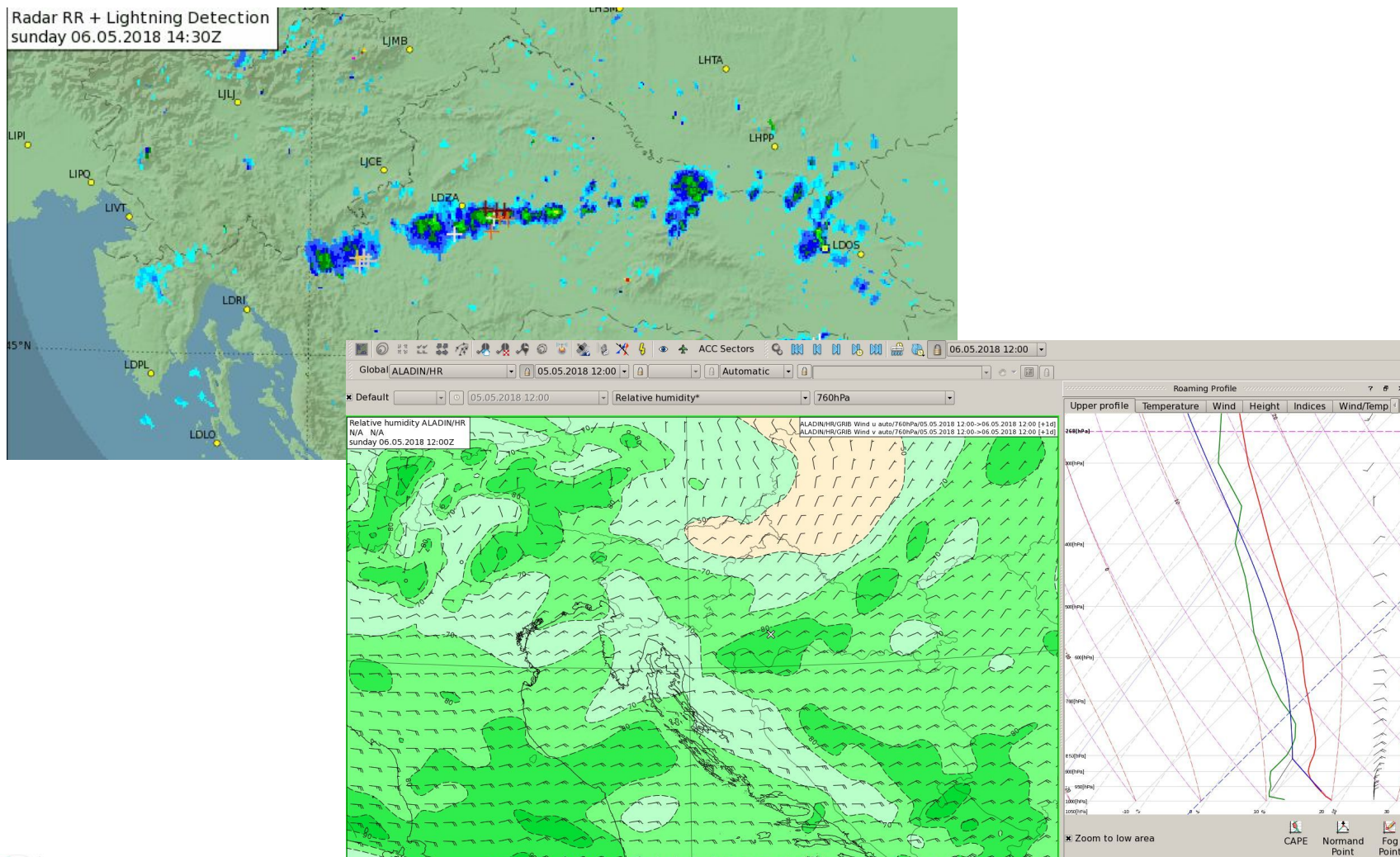
Snow shower 12:50

Change wind direction W => SSW

Evening new SABL

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Case 2 Elevated convection

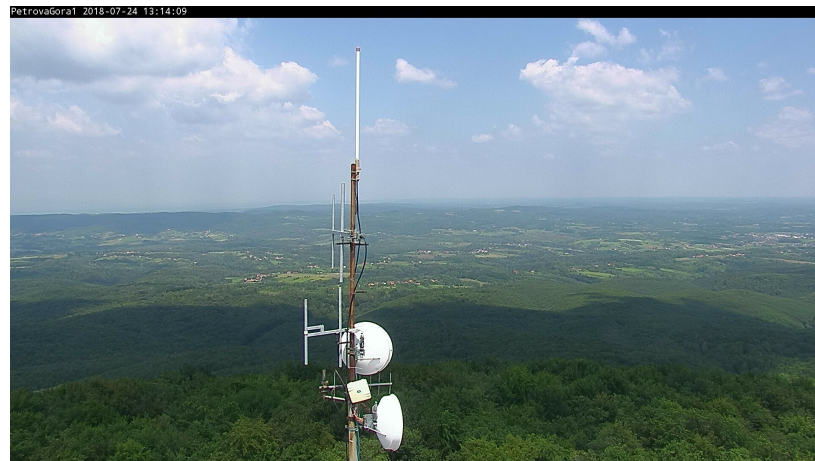## Not in the model

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Case 2 Elevated convection 6.5.2018.

■ Convection

Shallow
flat tops

Potential for deep
different H tops

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Examples

Dry snow

Wet snow

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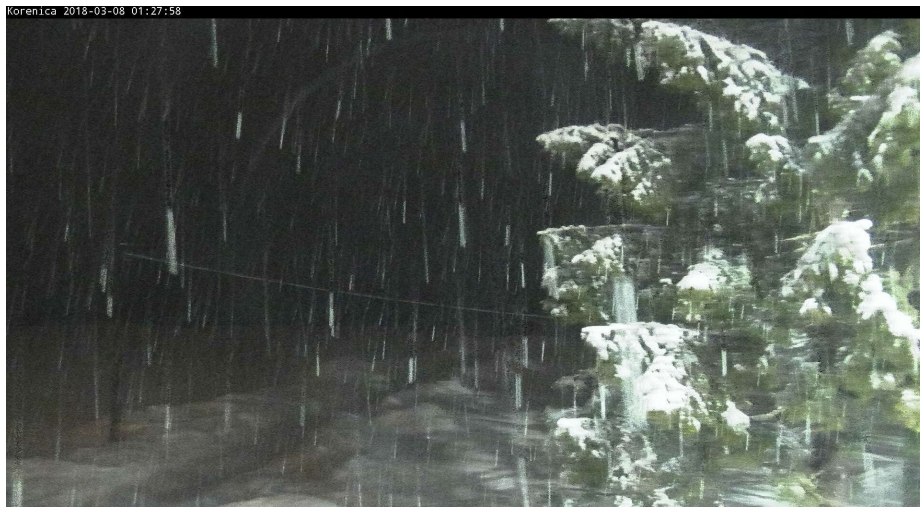CONTROL
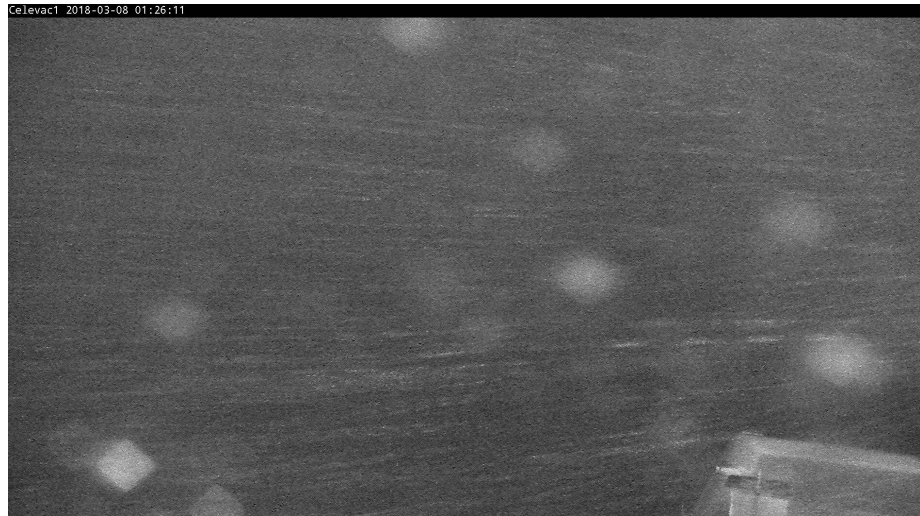
Experiences

Animations

- atmospheric processes usually "too slow" for human eye
- frame 20sec - 1min - 10min
- trend and physical process

Storage demanding

- temporary - almost all (10 days)
- permanent - selected (1gb/day)

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Experiences

Monitoring weather for one station

- from station - very good if not sheltered

- in some cases a allocation

    convection 5-10km (not too high)

    fog/mist 1-5km

In persistent situation - animation from yesterday

Limited usage during night

Sun behind camera

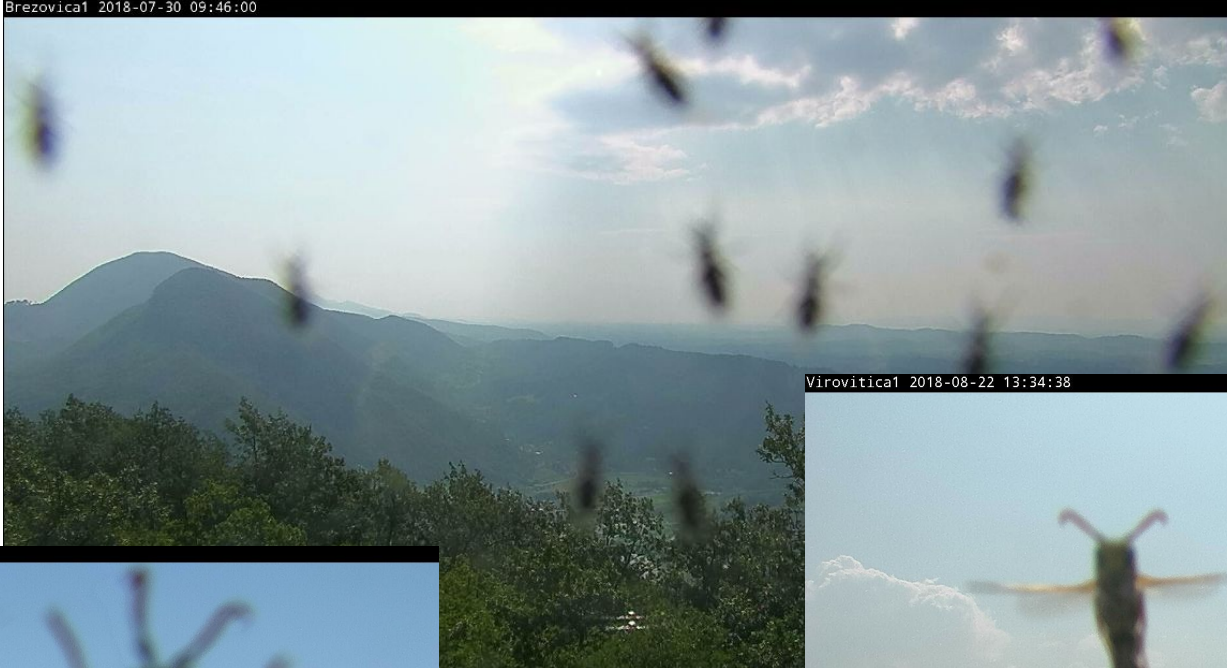- sunrise - better to look at W, NW; sunset E, NE

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Education

Seminar for forecasters - autumn 2018

-basics of cloud

-climatology

-experiences of observing clouds from observers

-physical processes within clouds

-interpretation and features

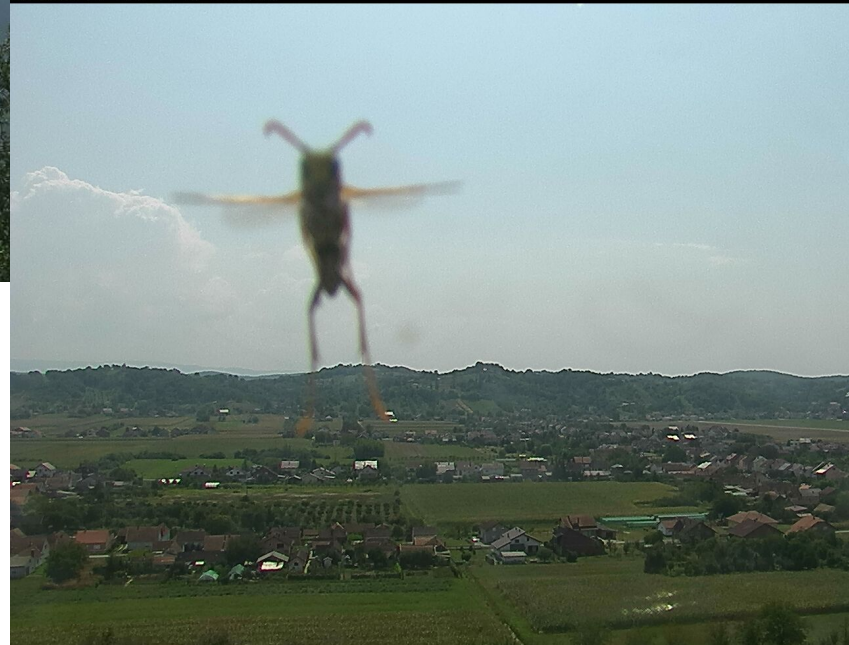-experiences from webcams

-"nowcasting"

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Conclusion webcams

- complement observing system
- estimate if the route is closed for aviation
- reveal feature that are not in regular reports
  - trends, physical process, inversions…
- recommended usage of animation
- better diagnose of current weather situation which could improve forecasters nowcasting

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Thank you