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# Deep neural network models for nowcasting using satellite data

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#### WeADL 2021 Workshop

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## Research objectives

- Automate the process of nowcasting using machine learning
- Obtain good performance
- Develop robust models











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## Existing approaches

- Mostly RNN-based
- This is cumbersome in many ways











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## Our approach

- Experiments conducted on 10 days of data, 5 from 2018, 5 from 2020
- Published in DeePSat: A deep learning model for prediction of satellite images for nowcasting purpose – KES 2021, accepted
- Xception-style deep CNN, with (t, t+1) pairs, (t+1)-t=15 minutes
- A "flat" model
- Decent results for the model type let's take a look

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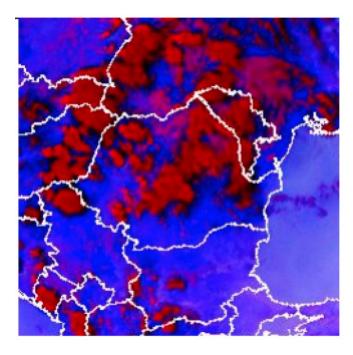


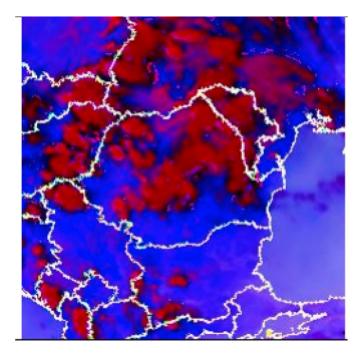




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## Our results





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### Our results

Model	<b>Evaluation measure</b>	CH_WV62	RGB_0014	RGB_0016	RGB_0017	RGB_0020	Average
DeePS at	MAE	1.464	13.456	9.557	8.414	16.006	9.779
	NMAE	0.57%	5.28%	3.75%	3.30%	6.28%	3.84%
Baseline CNN	MAE	1.024	20.846	11.623	8.31	17.281	11.925
	NMAE	0.40%	8.17%	4.56%	3.26%	6.99%	4.68%











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## Future work

- RNN-based models still do better
- We want a best of both worlds approach

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## Q & A