Event Extraction Alone Is Not Enough Rethinking events and narratives

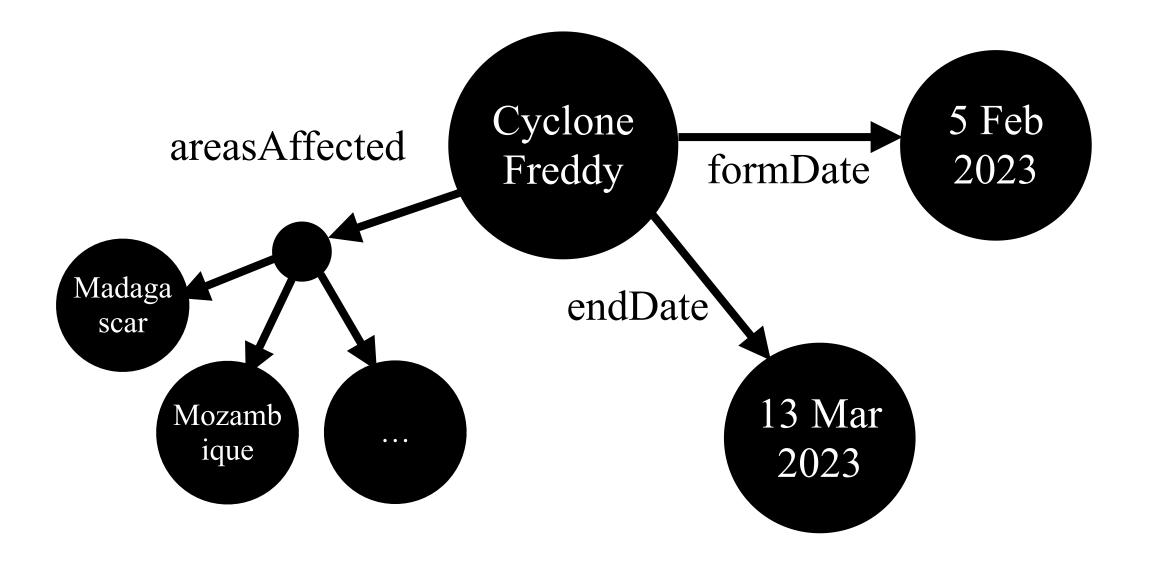
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Some Intuitions Event? Narrative?



Event Extraction is Not Enough (Text2Story@ECIR 2024)





Record-breaking Tropical Cyclone Freddy formed on Feb. 5, 2023 ... Cyclone Freddy made landfall on Madagascar's eastern coast, near Mananjary, on Feb. 21. Freddy then moved across the Mozambique Channel and made landfall in Mozambique's Inhambane province on Feb. 24...[1] As of March 13, 2023, the storm went further inland as a tropical depression ... [2]

Source:

[1] https://disasterphilanthropy.org/disasters/tropical-cyclone-freddy/

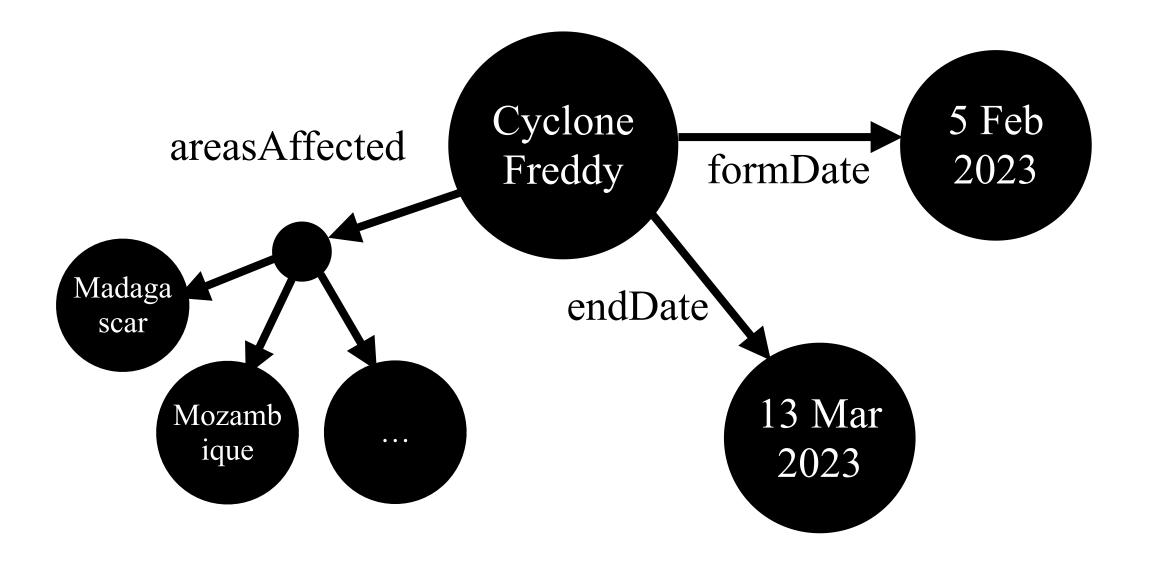
[2] https://www.rainviewer.com/blog/tropical-cyclone-freddy.html







Some Intuitions Event? Narrative?



Event Extraction is Not Enough (Text2Story@ECIR 2024)





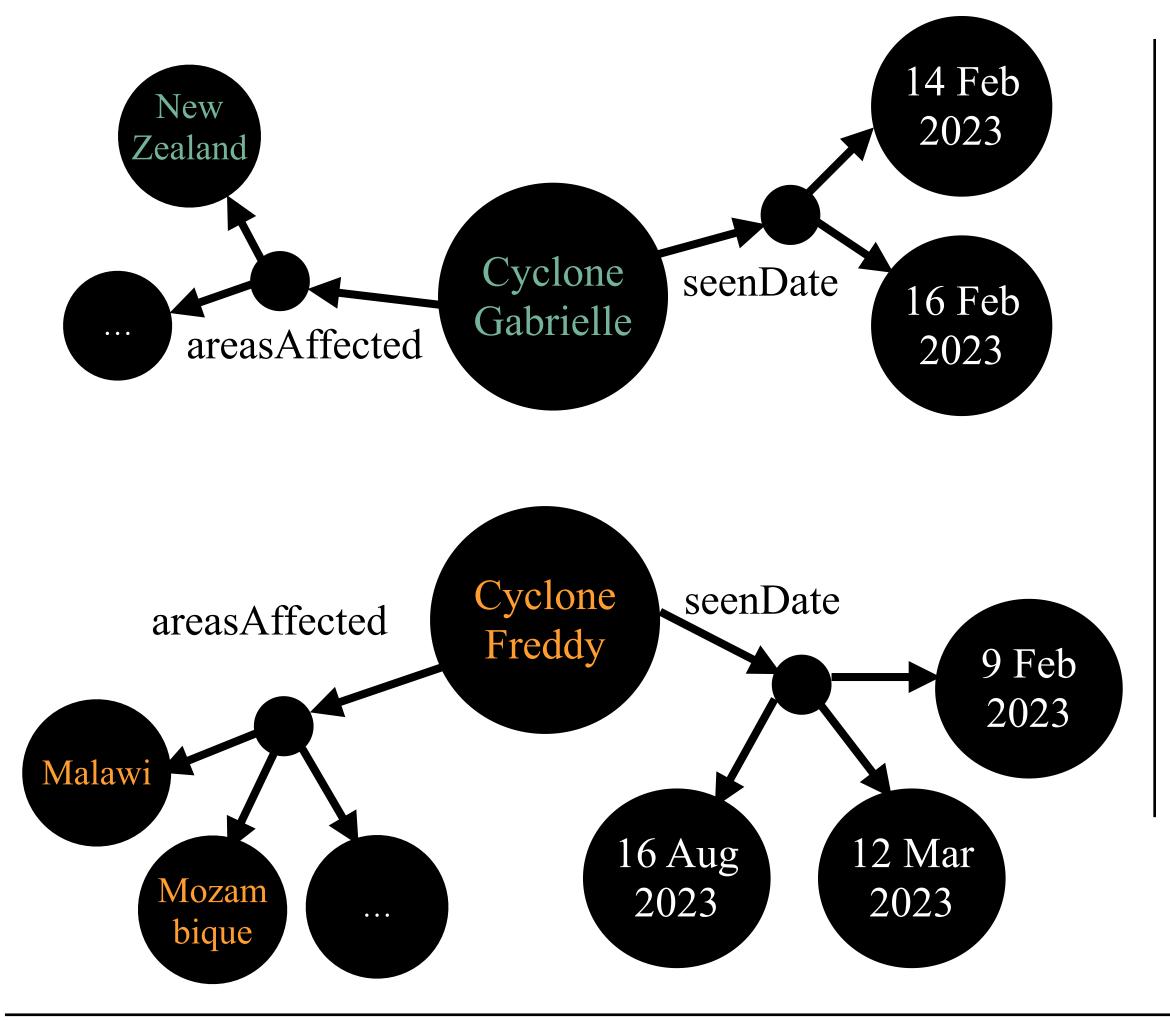
Where to find that perfect piece of text, that provides accurate and complete information for in-disaster early crisis response?







Some Intuitions Event? Narrative?



Event Extraction is Not Enough (Text2Story@ECIR 2024)





Cyclone Freddy Lashes Mozambique and Malawi

9 Feb 2023

https://www.dw.com/en/cyclone-freddy-lashes-mozambique-and-malawi-killing-scores/a-64971000

Cyclone Gabrielle Lashes New Zealand

14 Feb 2023

https://earthobservatory.nasa.gov/images/150972/cyclone-gabrielle-lashes-new-zealand

Cyclone Gabrielle causes national state of emergency in New Zealand

16 Feb 2023

https://www.rmets.org/metmatters/cyclone-gabrielle-causes-national-state-emergency-new-zealand

Record-Strength Cyclone Freddy Pounds Mozambique after Making 2nd Landfall 12 Mar 2023

https://www.voanews.com/a/record-strength-cyclone-freddy-pounds-mozambique-after-making-2nd-landfall/

Mozambicans rebuild after deadly Cyclone Freddy

16 Aug 2023

https://reliefweb.int/report/mozambique/mozambicans-rebuild-after-deadly-cyclone-freddy











Definition **Event? Narrative?**

Event

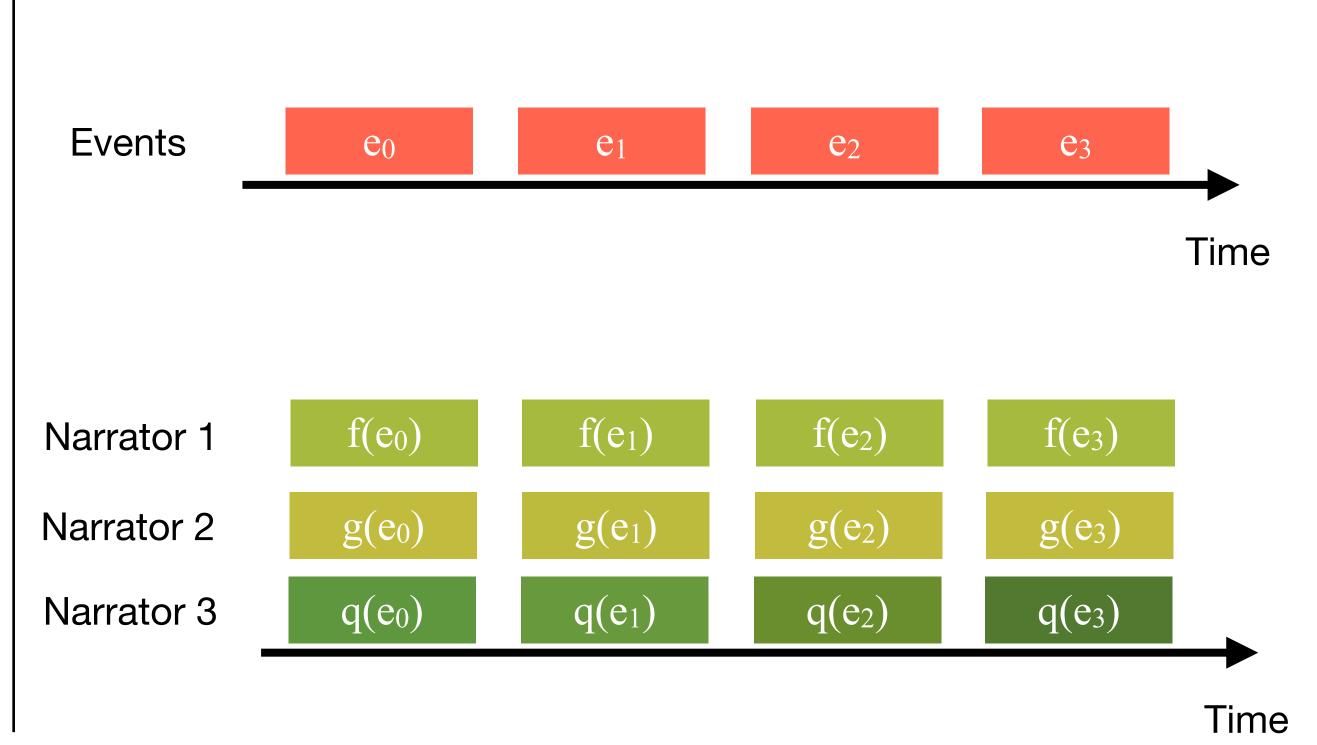
Real-world occurrence of a particular incident

Narrative

> An event or a sequence events and the telling (narrative discourse) of it.

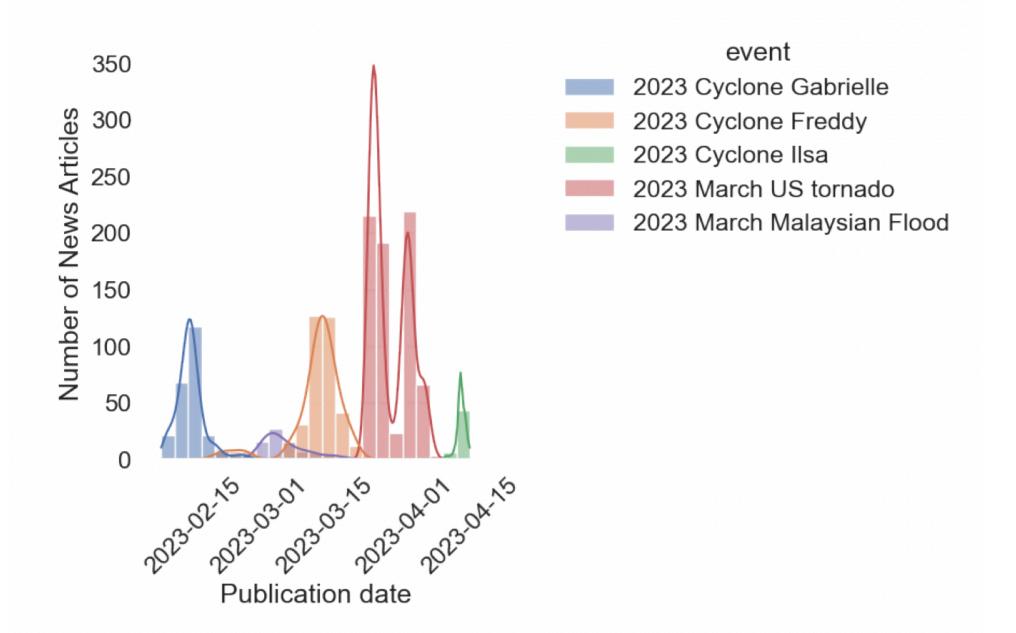








Two Problems 1. Temporally Overlapping Events?



(a) Event distribution over temporally overlapping events. Note that multiple events can have a compound effect on a set of geopolitical entities. Such compound effect can not be captured by extracting only word-based event mentions.





How to link the extracted event information to the correct event instance?







Two Problems

2. Different Narrative Discourses?



(b) Sentence-level event representation on 2023 Cyclone Gabrielle in different stages of event development. This representation captures event attributes, the effect of events and the telling of the events, known as narrative discourse.





How to select a subset of news with relevant event information?



Our Contributions A case study on storm-related events

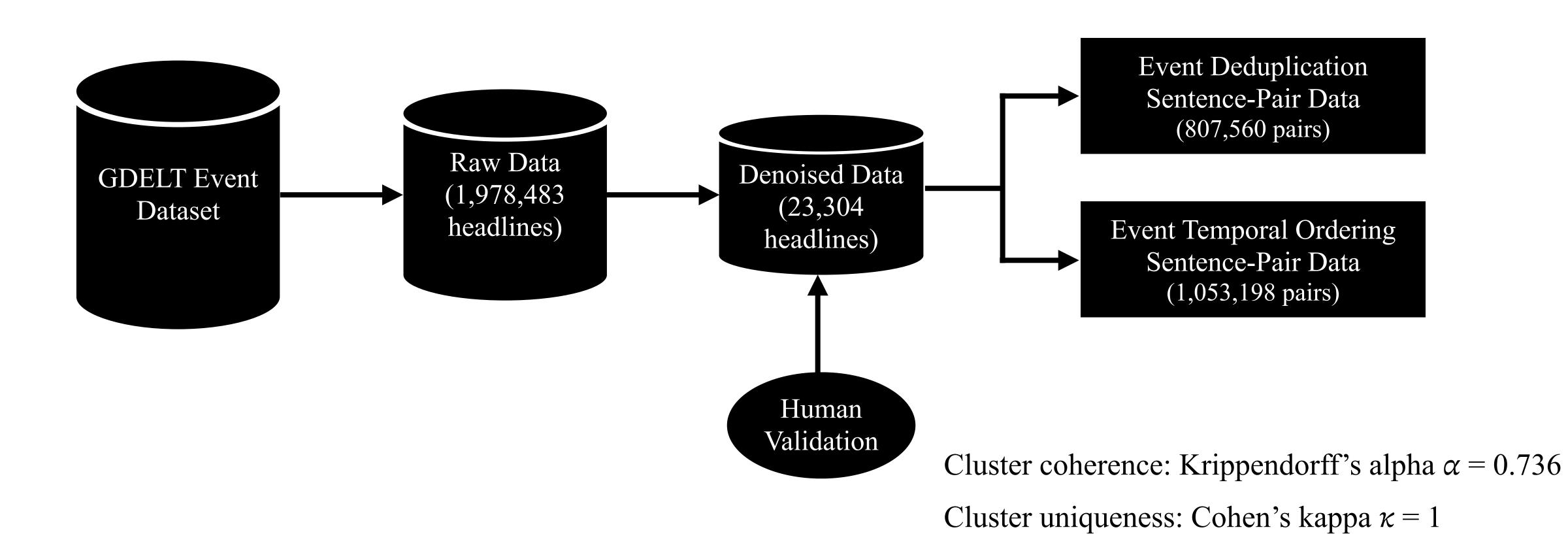
- *Eventist*: a large-scale silver-standard event instance dataset
 - 23,304 English news headlines
 - 113 storm-related real-world events from 90 countries
 - January 1, 2021 to September 1, 2023
- Two benchmarks
 - event deduplication
 - event temporal ordering







Eventist **Dataset Construction Pipeline**



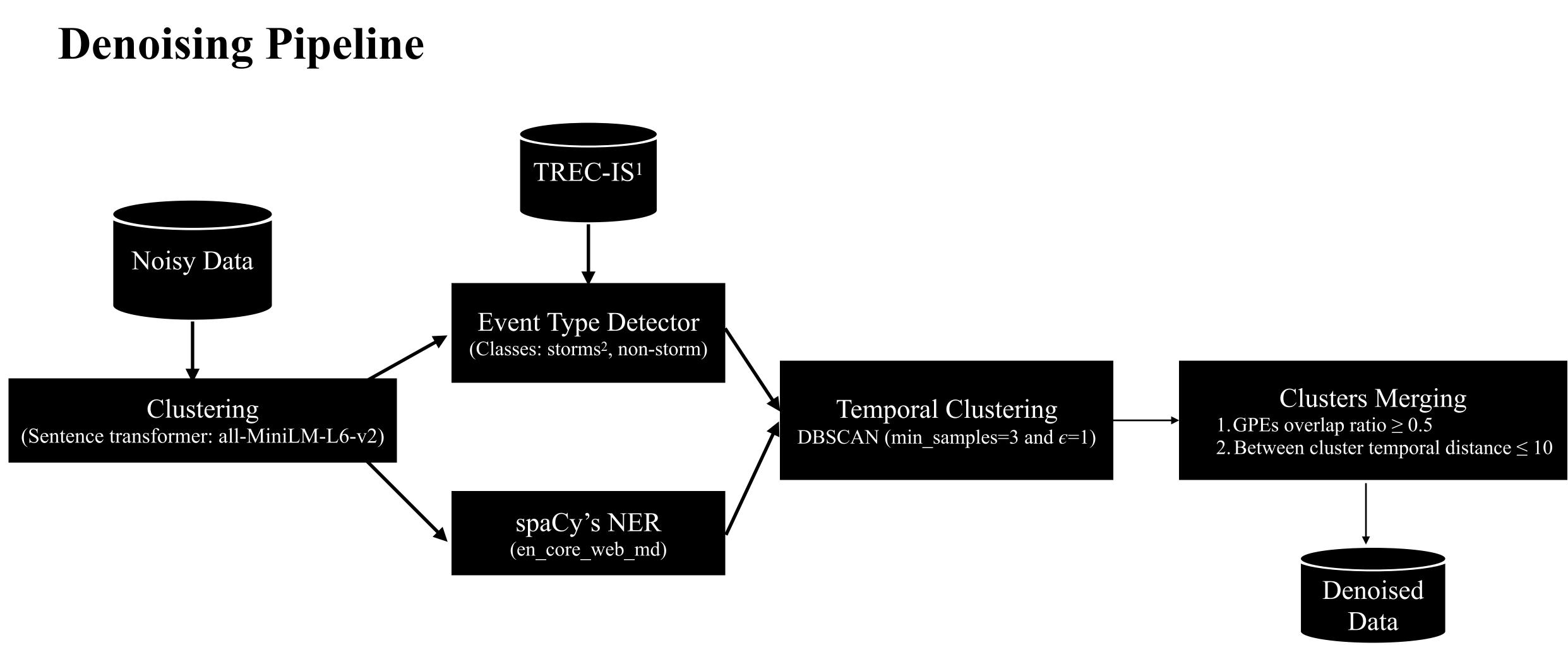
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¹TREC-IS: Text REtrieval Conference Incident Streams ²Storm class includes tropical storms, hurricanes, floods, typhoons and tornadoes.

Event Extraction is Not Enough (Text2Story@ECIR 2024)

Eventist







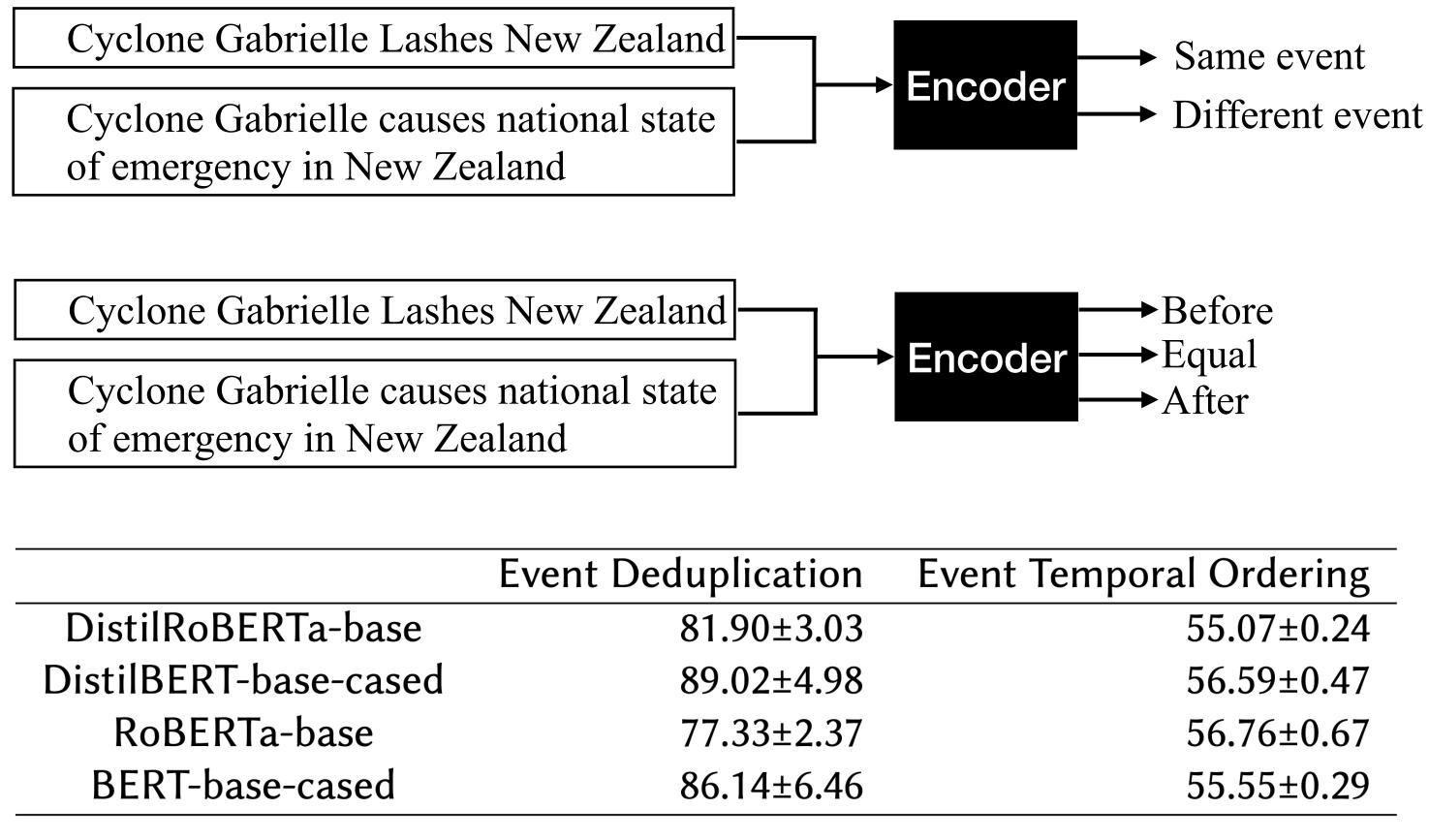


Eventist **Benchmark Results**

• Event Deduplication

• Event Temporal Ordering

• Baseline Models







	Event Deduplication	Event Temporal Ordering
oBERTa-base	81.90±3.03	55.07±0.24
RT-base-cased	89.02±4.98	56.59±0.47
ERTa-base	77.33±2.37	56.76±0.67
-base-cased	86.14±6.46	55.55±0.29



Afterthoughts

- It is practically important to discriminate event instances.
- Is the telling of events alone informative enough to do temporal reasoning?
 - Representation learning and similarity of the telling.
- Beyond Storm: Generalizability of the denoising pipeline.





