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ENVIRONM-ENTAL SCIENCE (EV)

EDITING SAMPLE

Prepared by:

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Environmental Science Research Paper — Technical Copyediting Sample (Client Anonymised)

***Service:** Subject-aware copyediting (Environmental Science) | **Style:** American English | **Mode:** Track Changes + Comments*

Prepared by: RE4U Solutions

Confidential — for demonstration only

A) Context table

Field	Details
Subject	Satellite-based flood mapping of the 2022 Pakistan floods using Sentinel-1 SAR and the TU Wien flood-mapping algorithm for Copernicus Emergency Management Service (CEMS) global flood monitoring.
Type of article	Environmental science / remote sensing / hydrology research manuscript (quantitative, algorithm application + performance assessment using reference flood maps). *(Inferred from the study description and evaluation focus in the sample.)*
Sections shown in sample	Abstract, Introduction excerpt, Conclusions excerpt.
Primary goal of editing	Improve technical clarity and readability (methods/results narration, acronyms, units, and consistency) while maintaining scientific meaning; American English with reviewer-friendly markup.
Editing level demonstrated	Subject-aware technical copyediting (Environmental Science) with Track Changes + Comments (clarity/consistency without altering scientific conclusions).
Deliverables	Track-changes edited file + Comments (reviewer-facing editorial rationale).

B) "Overall issues found" + "Solution provided" (cover page summary)

Major issues (high impact)

1. **Acronym clarity:** Key terms (e.g., Sentinel-1 SAR, CEMS/GFM, NRT, AOI) needed consistent first-use expansion and reuse across sections.

2. **Methods/results readability:** Several sentences were dense and "multi-idea," making the workflow and evaluation hard to follow at first read.
3. **Quantitative precision**: Metrics (CSI, flooded area in km^2, peak extent/date) needed cleaner unit/number presentation and unambiguous phrasing.
4. **Conclusion flow:** The event timeline and interpretation required tighter transitions to read smoothly and logically.
5. **Evidence-aligned claims:** Performance statements needed reviewer-safe, cautious wording with limitations clearly signposted.

Minor issues (low–medium impact)

- Grammar/usage and small style breaks (articles, prepositions, tense smoothing)
- Consistency in terminology, hyphenation, dates, and unit formatting (e.g., km^2; near-real-time)
- Punctuation and citation/formatting uniformity for a cleaner reviewer experience

Solution provided (what RE4U copyeditors did)

- **Delivered meaning-preserving technical copyediting** to improve clarity without changing the science.
- **Restructured key sentences for a clear story**: context → data → algorithm → evaluation → metrics → limitations.
- **Standardised acronyms/terms and polished** numerical reporting (units, formatting, and measurement reference).
- **Added Track Changes + Comments** so authors can see *what changed* and *why* at a glance.

Current verdict: *The manuscript addresses a timely environmental-monitoring challenge—near-real-time mapping of the 2022 Pakistan floods using Sentinel-1 SAR—and the overall workflow (data → algorithm → evaluation) is clear. However, the writing is sometimes heavier than necessary: acronyms and programme names are introduced unevenly, key steps are compressed into long sentences, and several quantitative statements would benefit from cleaner unit/number formatting and explicit measurement references. The conclusions will read more persuasive with smoother chronology and cautious, evidence-matched language on performance and limitations. The edits are meaning-preserving and domain-aware, improving clarity and reviewer readability, while keeping the scientific intent and results intact.*

ABSTRACT

In August and September 2022, Pakistan ~~was hit by a severe flood, and~~experienced devastating floods that affected millions ~~of people were impacted. The~~. To document the flood's progression from August 10 to September 23, 2022, the Sentinel-1-based flood mapping algorithm developed by Technische Universität Wien (TU Wien) for the Copernicus Emergency Management Service (CEMS) global flood monitoring (GFM) component was ~~used to document the propagation of the flood from 10 August to 23 September 2022.~~employed. The results were ~~evaluated~~assessed using ~~the~~ flood maps from the CEMS rapid~~-~~-mapping component. Overall, the algorithm ~~performs reasonably well with~~ demonstrated commendable performance, achieving a critical success index of up to 80 ~~%, while the detected differences can be primarily~~%, with most discrepancies attributed to the ~~time difference of~~timing differences between the algorithm's results and the corresponding reference. Over the ~~6~~six-week ~~time span~~period, an area of 30,492 ~~km2~~ km^2 was observed to be flooded at least once, ~~and~~with the maximum extent ~~was found to be present~~recorded on August 30 ~~August. The~~. This study ~~demonstrates~~highlights the ~~ability~~capability of the TU Wien flood mapping algorithm to ~~fully~~ automatically ~~produce~~generate large-scale results and illustrates how ~~key~~essential data ~~of~~regarding an event can be derived from these ~~results~~outcomes.

INTRODUCTION EXCERPT

Pakistan is ~~a flood-prone country. The local~~ particularly vulnerable to flooding, with its climate ~~shows a~~marked by distinct wet and dry ~~season, causing~~ seasons that result in floods ~~mostly happening between~~ from July ~~and~~to September. ~~Heavy rainfall caused by~~ During this period, the combination of heavy monsoon rains and ~~the~~ snowmelt from the upstream Himalayan region ~~during these months supply copious amounts of~~ significantly increases the water ~~to~~levels in local rivers. The Indus River ~~collects and carries the~~ then transports these large volumes ~~to the south~~of water southward to ~~flood-prone regions that are~~ densely populated ~~(Qasim et al., 2015). Besides the climate- and topographic-~~ areas that are prone to flooding (Qasim et al. 2015). Beyond natural causes related ~~flood causes~~to climate and topography, human~~-made transformations aggravate~~ activities have worsened the situation~~, as deforestation~~. Deforestation reduces the land's natural ~~retention capacity of the land~~ability to retain water, and the lack of artificial ~~flood plain regulations increases the exposure to intense floods (Khan, 2013). Today, agriculture makes up~~ floodplain regulation increases the risk of severe flooding (Khan, 2013). Agriculture, which accounts for one-fifth of the country's GDP ~~(The Editors of Encyclopaedia, 2023b). Due to the~~ (The Editors of Encyclopedia, 2023b), is especially at risk because of the proximity of ~~the majority of the~~most crops to the Indus River~~, the sector is specifically endangered by flooding. Because of these reasons~~. Consequently, floods in Pakistan often ~~result in enormous~~cause substantial harm to both human life and the local economy. ~~One event happened~~For example, a flood in 2010 ~~and~~ affected ~~about~~ approximately 14 million people ~~(Gaurav et al., 2011). Only~~ (Gaurav et al., 2011). Just 12 years later, ~~starting from~~ beginning in mid-June~~-~~ 2022, Pakistan ~~was hit by the country's worst~~faced its most severe flooding in a decade, ~~and~~submerging tens of thousands of square ~~kilometres were inundated (NASA Earth Observatory, 2022). Besides the mentioned~~ kilometers (NASA Earth Observatory 2022). In addition to monsoon conditions, ~~Otto et al. (2023)~~ Otto et al. (2023) identified intensified rainfall due to climate change as ~~one of the major contributors~~a significant factor contributing to the catastrophic ~~magnitude~~scale of the event.

~~As~~In response to the 2022~~-~~ flood ~~destroyed many~~, which severely damaged numerous roads and ~~other~~ infrastructure ~~and the extent of the inundated area covered~~over an ~~extremely~~

~~large~~extensive area, satellite data ~~were the only way of~~ became an essential tool for providing large-scale information ~~of the affected area~~ to local authorities~~.~~ about the affected regions. Among ~~other~~the various space ~~programmes~~programs, the Copernicus Earth Observation ~~programme gives access to~~program stands out by offering systematic observations of the Earth's surface, ~~providing~~which are crucial ~~information on~~for understanding the impact of natural disasters. ~~Especially~~In particular, the C-band synthetic aperture radar (SAR) mission of Sentinel-1 ~~provides~~delivers cloud-independent, all-day imagery with ~~unprecedented spatio-temporal sampling, enabling~~ exceptional spatiotemporal resolution, aiding in the mapping of flooded areas. To ~~retrieve the~~identify flooded areas from ~~the~~ satellite data, the Copernicus Emergency Management Service (CEMS) offers~~-~~ two components: ~~the~~ rapid mapping ~~service~~ and ~~the~~ global flood monitoring (GFM) ~~(Salamon et al., 2021) service. While the rapid mapping service works on demand of an authorised~~ services (Salamon et al., 2021). The rapid mapping service is activated upon request by an authorized user and ~~makes use of many different~~incorporates data from multiple satellite missions, whereas the GFM service ~~relies~~ exclusively ~~on~~uses Sentinel-1 observations ~~and provides results~~ to provide fully ~~automatic in~~automated near-real-time (NRT) results for each ~~incoming~~new scene. ~~The~~This service ~~utilises~~employs three ~~independent~~distinct flood~~-~~-mapping algorithms ~~and provides~~to generate an ensemble result. One of ~~the~~these algorithms ~~has been~~, developed by Technische Universität Wien (TU ~~Wien) (Bauer-Marschallinger et al., 2022), and its results for the~~ Wien) (Bauer-Marschallinger et al., 2022), was analyzed in this study for its performance during the 2022 flood in Pakistan ~~2022 are shown and evaluated in this study~~.

CONCLUSIONS EXCERPT

This study ~~shows~~underscores the potential of providing ~~information in~~ near-real-time (NRT) data on large-scale flood events ~~at large scale, and~~ , which facilitates the ~~retrieved data allow for an estimate of the~~ estimation of affected ~~area~~areas and ~~the progress~~monitoring of ~~the~~ event progression. This ~~kind of~~ information is ~~especially valuable to~~ crucial for authorities and rescue ~~units, supporting~~teams, assisting them in making time-~~critical~~sensitive decisions ~~in situations where~~when infrastructure damage hinders ground-based methods ~~are unavailable due to the destruction of infrastructure. Overall, an area of 30 492 km^2 has been observed to be affected by the~~ . The catastrophic Pakistan flood of 2022~~, which corresponds to about 15 % of the observed area~~ impacted an area of 30,492 km^2, accounting for approximately 15% of the area analyzed in this study. The flood extent ~~increased~~expanded from the ~~beginning~~onset of the ~~time span~~period on ~~18~~ August~~, grew further~~ 18 continued to grow until ~~30~~ August~~,~~ 30 and ~~decreased afterwards. The~~then began receding. On August 30, the flood extent observed from Sentinel-1's relative orbit ~~78~~ 78 reached 18,047 km^2, and by the conclusion of the period on ~~30 August reached 18 047 km^2, while at the end of the time period on 23~~ September~~, there is still 6331 km^2 flooded~~ 23, 6,331 km^2 remained submerged.

The ~~above-mentioned~~ statistics mentioned above were ~~retrieved based on the results of~~derived from the TU~~-~~ Wien flood mapping algorithm, which ~~utilises~~employs Sentinel-1 data to ~~identify~~detect flooding on a per-pixel ~~basis~~level. To ~~quantify~~assess the algorithm's performance ~~of the algorithm~~, an ~~evaluation based on~~analysis was conducted in three specific areas of interest (AOIs~~) was executed and analysed.~~). The ~~resulting differences~~discrepancies between the TU~~-~~ Wien results and the reference data ~~are found to be mostly related~~were primarily attributed to the ~~difference in~~different acquisition times of the satellites used ~~for producing~~to generate the flood extent maps. ~~As~~Given that the ~~applied~~algorithm approach ~~of the algorithm can be used~~is applicable globally ~~for~~to any covered location and the results are produced automatically ~~generated results are kept unchanged (with no~~without human ~~interaction),~~intervention, the ~~achieved~~ performance in the evaluation is ~~considered satisfying. Due to the lack~~deemed satisfactory. However, the absence of large-scale reference data~~,~~ restricted the evaluation ~~is limited~~ to three relatively small areas ~~in comparison~~compared to the ~~large~~larger study area. Consequently, the algorithm's performance over ~~some~~certain land cover types~~ like desert~~, such as deserts or ~~types of~~specific vegetation ~~that are~~types not ~~covered can not be evaluated~~included in ~~this~~the study, remains unevaluated.

WHAT WE CHANGED / WHY / RELEVANCE TO ENVIRONMENTAL SCIENCE

Change type	What our copyeditors did	Why it was needed	Why it matters in Environmental Science
Acronym + programme clarity	Standardised first-use expansion and consistent reuse of core acronyms/labels (e.g., Sentinel-1 SAR, CEMS, GFM, NRT, AOI) across Abstract → Introduction → Conclusions.	Readers were being asked to decode multiple systems and services while following the flood-mapping workflow.	Reviewers in remote sensing expect **instant clarity** on sensors/services; unclear acronyms can look like a methods gap and slow down peer review.
Methods/results readability	Restructured dense “multi-idea” sentences so the workflow reads in a clean sequence: **context** → **data** → **algorithm** → **evaluation** → **key metrics** → **limitations**.	Several lines packed too many steps into one sentence, making the logic harder to follow at first read.	Environmental science papers are judged heavily on **method transparency**; cleaner sentence architecture improves reproducibility perception.
Quantitative precision (numbers + units)	Cleaned number presentation and unit consistency (e.g., km^2) and clarified what each metric refers to (CSI, flooded area, peak date/extent).	Metrics were correct but needed tighter presentation so they can’t be misread or questioned.	Reviewers often “scan for numbers”; if units/definitions are unclear, they may doubt the results even when the science is solid.
Conclusion flow (timeline narration)	Smoothed chronology and transitions in the event progression (onset → growth → peak → recession → residual flooding).	The conclusion carried multiple time points in one stretch, which reduced impact and readability.	For hazard-event papers, conclusions must read like a **clear operational story** for decision-makers and reviewers.

Evidence-aligned claims (reviewer-safe tone)	Refined performance statements to stay cautious and evidence-matched, with limitations kept visible (timing mismatch, limited reference data, land-cover gaps).	Some evaluative wording needed to be framed more defensibly and anchored to the stated constraints.	Environmental journals are strict about overclaiming; careful interpretation prevents "major revision" requests for tone/evidence mismatch.
Grammar + American English	Corrected small usage issues (articles, prepositions, tense smoothing) and aligned style to American English throughout.	Minor language breaks can distract reviewers and weaken an otherwise strong technical narrative.	In high-scan technical reviews, language noise lowers perceived rigor; clean US English improves professionalism immediately.
Consistency (terminology, hyphenation, citations/format)	Aligned terminology and formatting (e.g., near-real-time hyphenation, units, dates, citation punctuation) across sections for a single "house style."	Small inconsistencies accumulate and make the manuscript feel less controlled.	Consistency is a credibility signal in technical fields—reviewers assume a careful team when style and terms stay stable.

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