Reviewer 1:

This manuscript is a very elaborate description of an active fogwater collector, which is employed at the Puy de Dôme site in France. The collector is precisely described, its internal flow is modelled with a CFD fluid dynamic model, the collector and its performance are tested in the field during side-by-side comparisons with two other fog collectors. Results are described in great detail, good performance and good agreement with the other 2 active collectors is shown. This refers to the sampling efficiency (with respect to the liquid water content (LWC) of the fog or cloud, and to the results of inorganic ion analyses. The manuscript is well written, well supported by data (including the supplementary material) and deserves publication in AMT after the following 3 concerns have been addressed accordingly.
We would like to thank the reviewer for his review and the high regard in which it holds the development work that was carried out. We answer to his/her comment below in blue.

1- Results of 17 cloud events are presented. Is that number (17) the entire population of events probed? If yes, please state that prominently in the manuscript. Or, alternatively, are these 17 "beautiful" events that were selected from a larger pool of data. If so, authors are asked to communicate in the manuscript the arguments / parameters / thresholds they used to select these 17 events. Important: At some point in the manuscript, sampling dates (and times) of all 17 events need to be documented.
Yes, you are right we must explain why 17 cloud events were selected for our analysis. The collector was developed in 2016 and between 2016 and 2023, more than 17 cloud events were sampled. We selected these events based on the availability of LWC measurements and of the exact measured mass of the collected water. Table below presents all the events between 2016 à 2023 that we excluded from our analysis based on these criteria. We added in the manuscript a sentence to explain how the 17 events analyzed in this work were selected (section 3.3.2). To answer to your other comment, the information regarding the sampling dates (and times) of the 17 cloud events are indicated in Table S3 in the SI together with meteorological parameters (T, wind speed), microphysical parameters (liquid water content [LWC], effective radius) and mass of the collected cloud water.

Date of sampling	LWCmeas	Measured Mass of water (g)
05/06/2016	OK	N.A.
12/07/2016	OK	N.A.
13/10/2016	OK	N.A.
14/10/2016	OK	N.A.
21/10/2016	OK	N.A.
26/10/2016	OK	N.A.
21/02/2017	OK	N.A.
08/03/2017	OK	N.A.
24/03/2017	OK	N.A.
02/05/2017	N.A.	
19/05/2017	N.A.	
29/06/2017	N.A.	
31/08/2017	N.A.	
26/09/2017	N.A.	
03/10/2017	N.A.	
24/08/2018	N.A.	
14/09/2018	N.A.	

01/10/2018	OK	N.A.
08/10/2018	OK	N.A.
02/03/2019	N.A.	
15/03/2019	N.A.	
25/09/2019	N.A.	
02/10/2019	N.A.	
22/10/2019	N.A.	
11/03/2020	N.A.	
28/04/2020	N.A.	
17/07/2020	OK	
10/11/2020	OK	
19/11/2020	OK	
28/04/2021	OK	N.A.
06/05/2021	OK	N.A.
08/07/2021	OK	N.A.
16/09/2021	OK	N.A.
03/11/2021	OK	N.A.
17/02/2022	N.A.	
17/03/2022	OK	N.A.

N.A. : Not Available.

To address the reviewer's comment, we decided to add new cloud events to this study to improve our collector evaluation study. So, 4 cloud events collected in spring 2024 corresponding to 19 samples were added to the database analyzed in this article. Some of the events were sampled in windy conditions, enabling us to further analyze the influence of wind on the BOOGIE collector efficiency.

2- The title of the manuscript is awkward and needs revision. First, BOOGIE seems to be a nickname for the collector, it does not appear to be an acronym. However, the prominent mention of the word (capital letters in the title) suggests something extraordinary which is not present.
To be honest, the collector's name "boogie" is a tribute to an "entity" that has been important in cloud-related activities on the Puy de Dôme site. Of course, linking this acronym to the description of what the collector does is rather difficult. But our aim was not to oversell what our collector can do, since it only collects water! But collecting cloud waters among various environmental conditions is crucial and subsequent analysis in the lab helps to better assess the effect of clouds on atmospheric chemistry.

Also, authors mention that the collector is newly designed (for example, in line 571), which is not really true since it has been employed for over 30 years.
Before 2016, we used a CWS sampler following the design proposed by Kruiz et al. (1993). The collector (BOOGIE) that is presented in this work has been developed in our lab in 2016. We only used the BOOGIE collector during the last 8 years at the Puy de Dôme station and also at La Réunion Island. This is indicated in the introduction section (lines 163-164). We modified the text to avoid any confusion about the novelty of this development.

Further, the title of the manuscript promises more than the manuscript really offers. Of the second part of the title (…Biological, Organics, Oxidants, soluble Gases, inorganic Ions and metal Elements), this reviewer really only found inorganic ions. Biological analyses are mentioned, but results are not shown

in a very limited way: ATP/ADP ratio data are shown in the supplementary, results briefly discussed in the main manuscript (lines 506 – 512). Oxidants and metal elements are not even mentioned in the results section. The latter would require special attention before the backdrop of the metal construction of the collector. Very few results are shown for formaldehyde and hydrogen peroxide, while it is not clear to this reviewer if they meant to represent organics or soluble gases. All in all, the second part of the title needs to be removed.

Yes, we agree with your comments. The chemistry results focus mainly on inorganic ion chemistry, as well as measurements of: ATP/ADP, 2 oxidants (H_2O_2, nitrate) and one specific organic compound (formaldehyde).

We agree that the section about the ATP/ADP is brief, it is because the energetic cell states were comparable and easy to interpret. The ATP/ADP ratio were similar between the three samplers for each cloud event. The cloud microflora has an excellent energetic state for each collector sample; this indicates that these three samplers were not stressful for the microbiota and keep the microbial cellular integrity during the sampling.

The idea of the paper was not to make an in-depth comparison of the measurements obtained between different collectors but to mention that the measurements obtained were consistent with each other. The main objective of the paper is to present the collector and its efficiency. Moreover, within the framework of the European ACTRIS network, a special effort is being made on these aspects: intercomparison campaigns between collectors are being conducted (in which BOOGIE has been deployed) to compare their collection efficiency, and intercomparisons between cloud chemistry measurements are also being carried out. This work is still in progress, but initial results confirm that our collector is efficient, and indicate that laboratory measurements (mainly ions) are comparable between collectors, even if some bias may appear. This work will be promoted within ACTRIS (see The Centre for Cloud Water Chemistry (CCWaC): https://www.actris.eu/topical-centre/cis/centre-cloud-water-chemistry-ccwac).

Since we do not present the analysis of all the chemical compounds indicated in the title, we propose removing the second part of the title but keeping the proposed name BOOGIE. We hope this will be acceptable to the reviewer.

3- Droplet size distribution (DSD) data are not shown or analyzed. It is suggested (lines 550, 551) that such data was not available. On the other hand, it seems that there is plenty of literature from that site showing and discussing DSD data. Authors are asked to clearly state in the manuscript that such data is not available in all 17 events. Alternatively, please make very strong arguments in the manuscript about the reason why such data was not employed in this manuscript. Alternatively, analyze such data to support arguments of collection efficiencies as a function of droplet sizes.

To estimate the sampler efficiency, we used data from the PVM-100 instrument installed on site. It allows to evaluate the particle volume density (or LWC: liquid water content) and the particle surface area density (PSA). The effective radius R_{eff} can be calculated using LWC and PSA. This instrument has been in use at Puy de Dôme since the very beginning of cloud studies and is listed as mandatory instrument in the frame of the topical center “cloud in situ” measurements of the ACTRIS program. Measurement of LWC by the PVM is sufficient to assess collection efficiency of a collector, and other studies in the past have also used the data produced by this instrument to study their samplers (Kruiz et a., 1993; Demoz et al., 1996).

Of course, an instrument such as a fog monitor (FM-120) or particle measurement system (FSSP-100) designed for use during ground-based studies and allowing real-time display of particle concentration could give additional information to better interpret the role of the calculated cutoff diameter using CFD

simulations on the collection efficiency. But unfortunately, measurement of droplet size distribution was not available for all the 17 studied cloud events presented.

As you mentioned, numerous instruments have been deployed at Puy de Dôme (Guyot et al., 2015) with the aim of intercomparing instruments for measuring cloud microphysical properties (PVM-100, FSSP, FM-100, cloud droplet probe (CDP)...). This study highlighted the need to use an instrument such as the PVM that provides bulk measurement of cloud microphysical properties; indeed, this allows to evaluate the size distributions measured by instruments measuring size distribution, as the latter are highly sensitive to wind and cloud orientation.