

## Comments on Review by Referee Number 1

We are most appreciative of the detailed and prompt review of our paper “Data Driven Weather Forecasting.” We note here some comments related to the review.

We understand that the review period is not complete, and we will address all posts related to our paper and provide a revised manuscript at that time. There are some items which we wish to address at this time:

The reviewer wrote:

1. “The authors use the time-delayed observations to reduce the uncertainty of data-driven forecast.”

This is not the role of time delay embedding.

As discussed in detail in Section 2.2, see Equations (4), (5) and (6), and the text around them, the equations (4) for the observed subset of the state variables  $S(r,t)$ , which we call  $O(R,t)$ , depends on  $S(r,t)$ , and the core of Takens' theorem is the the time delay space with state vectors TD, in Equation (12) is an equivalent space, formally the spaces with vectors  $S$  and TD are connected by a diffeomorphism. We do not know, from observations alone the vectors  $S$ , but we do know the vectors TD. The use of time delay vectors in Equation (13) and elsewhere is dictated by the structure of the differential equations generating the data, even though we do not know the vector fields in Equation (4).

Please note that the TD vectors have components which are the observed  $O(R,t)$  and its time delays.

2. “I have another interpretation of the methodology presented in the manuscript. The use ...”

Of course, we agree with this paragraph, and it is clearly stated in Section 2.3.1 in the full paragraph after Equation (7) about the use of RBF's or any other representation of the flow vector field: “We can think of the observed samples as points of information about distribution  $f(S,x)$  and ask that the representation give us an interpolating function among the observed point locations  $S(r,t_n) = S(r,n)$ .”

This is totally equivalent to the “another interpretation” of the reviewer. We will clarify our language in the revised manuscript.

Our thanks again for the review and the suggestions on clarifying the language we have used.