1. The authors failed to show what is the added value of the methodology when compared to other studies. But most important, how this methodology improves the prediction of the hurricane trajectories. What are the advantages and disadvantages of using the proposed methodology? The authors should make this clear in a concise way.

[Answer]: To solve this problem, we refer to the nearly five years of relevant literature at home and abroad. After repeated studies, we find that: Most of the trajectory prediction research in the experimental part using artificial data sets. The experimental results and credibility, are not comparable with ours using real data; A few real-time predictions using real hurricane trajectory data only perform experiments on one or a few hurricane trajectories from the perspective of meteorological forecast. It's difficult to compare with the statistical result got from a large number of trajectories proposed in this study.

   Therefore, it's difficult to give the horizontal comparison.

2. References are missing in the Introduction part. There is a lot of information inside the introduction but not one single reference. The authors should refer to published work in this section.

[Answer]: We have added two references in Introduction part.

   Mobile communication equipment, animal migrations, traffic & transportation and clouds cluster tracking are all moving object instances in specific application areas (Morzy et al. , 2007) .

   On an average, more than 5 tropical cyclones become hurricanes in the United States each year causing great human and economic losses (Su Y et al., 2010).

3. I suggest deleting lines 18 to 21 and making a better structuring of the whole manuscript.

[Answer]: We have made a better structuring of the whole manuscript, and divided it into nine parts. They are Introduction, Related Work, Region Discretization, Frequent Trajectory Mining, Association rule generating, Pattern Matching For Predicting, Experiment, Analysis and Conclusion.

4. The Introduction section should also contain some related work. I suggest merging these two sections into one and making a better description of the methodology used.

[Answer]: The focuses of the two parts are not the same. So we think that it's necessary to separate them as two parts. The Introduction section has contained some related work (Seen in Question 2). We have made a better description of the methodology used.

   In this paper, we emphasize on the study of a hurricane trajectory prediction method based on data mining. The prediction method we propose gives up the complex modelling process in the traditional objective forecast method. Instead, it identifies the effective motion patterns in the historical trajectory database by using association analysis technology, and then predicts their future trajectories with pattern matching. The overall framework of the hurricane trajectory prediction method is shown as *Figure 1*. After data pre-processing, all frequent trajectories from 1900 to 2000 in the historical hurricane trajectory database are mined according to the given minimum support and then generate all corresponding association rules as motion patterns. Secondly, the current hurricane trajectories from 2001 to 2008 are matched with the motion patterns for predicting. If no association rule is returned, the one according to the hurricane current movement trend would be returned. At last, the correctness of this method would be verified.

5. The methodology should not be described as "Definitions" as they are really not definitions as such. The authors should find a better way to rename this section and to describe it thoroughly.

[Answer]: The Definitions part has been removed. All concepts have been put in their corresponding parts.

6. Line 26 page 5: What is k-1? I cannot see a k-1 reference earlier.

[Answer]: "k-1" means a certain trajectory's length. The length of the sub-trajectories mentioned in Definition 5 is k-1.

7. Line 30 page 5: How is this threshold defined? How did the authors assume this value? The authors should make clear throughout the whole manuscript the assumptions they used in the methodology.

[Answer]: We have added the concept of the support of a trajectory in Section 4.

Support Of Trajectory. Given a database of trajectories $TD= \{T_1, T_2, \cdots, T_n\}$. The support of a trajectory t_i is the percentage of trajectories in TD that support the trajectory t_i.

$$\sup port(t_i) = \frac{\sum_{k=1}^{n}\{count(t_i \subseteq T_k)\}}{|TD|}$$

Where |TD| is the trajectory number in TD, and $count(t_i \subseteq T_k)$ expresses the number of

T_k containing t_i. For example, if $T_1=\{a,b,c,a,b\}, t_1=\{a,b\}$, then $count(t_1 \subseteq T_1)=2$ 。

The support threshold here is a real number between 0 and 1, and all trajectories with support greater than this threshold would be chosen as frequent trajectories.

8. The used methodology is confusing and difficult to follow. I suggest that the manuscript follows the graphic and detailed workflow-framework in Figure 3. This will help in order for the reader to understand the entire process.

[Answer]: The structure of the manuscript has been adjusted (Seen in Question 3).

9. Line 12 page 6: Where does this rule's confidence comes from?? It is unclear for me why is this rule accepted and performed. The authors should discuss this in detail.

[Answer]: We have added the concept of the confidence of a movement rule in Section 5.

Confidence Of Movement Rule. The confidence of $h \Rightarrow t$-h is the conditional probability of t-h given h.

$$confidence(h \Rightarrow t - h) = P(t - h | h) = \frac{\sup port(t)}{\sup port(h)}$$

If a rule's confidence is greater than the user-defined threshold of minimum confidence, it will be accepted and performed.

10. Section 4: Should be rewritten completely in a descriptive manner and the algorithm should be added as an annex. The section looks very sloppy.

[Answer]: The algorithm has been added as an annex.

11. Section 5 Experiment and Analysis: This section should be rewritten and divided in two: the section experiment by itself and the analysis in another section. Both sections should be able to be stand alone and be understandable for the reader.

[Answer]: The section" Experiment and Analysis" has been divided in two sections. The figures in these sections have been changed.

12. Section 5.2.1: I suggest that the correct rates results should be shown as a "success graphs". This will enhance the section and the analysis.

[Answer]: The figures in this section have been optimized.

13. Section 5.2.1: I suggest the authors carry a sensitivity analysis regarding this section. Although not necessary, I think this could be beneficial to the manuscript.

[Answer]: We have tried to carry a sensitivity analysis, but the result is not ideal and sensitive.

14. Section 5.2.2: In which basis 57.5% of the whole prediction is a satisfactory one. The authors should clarify this and give the reasons for this statement.

[Answer]: It's an empirical conclusion.

15. The authors should include a section called "Discussion": The discussion section should be critical to the work and the difficulties found on it. The section should also include how the work can improve the quality of the present predictions methods and its transferability. Also include how to assess the propagation of uncertainties during the analysis.

[Answer]: We think the Section "Analysis" is the same as the Section "Discussion", So we merge them into a single one.

16. The conclusions are poor and do not reflect the results. This arise the question about the credibility of the method.

[Answer]: The conclusion has been added. The added content is as follows.

Firstly, all frequent trajectories in the historical hurricane trajectory database are mined by using association analysis technology and their corresponding association rules are generated as motion patterns. Then, the current hurricane trajectories are matched with the motion patterns for predicting. If no association rule is found for matching, a predicted result according to the hurricane current movement trend would be returned.

17. I suggest that table 2 and table 3 should be only one table. Of course, a clear distinction should be made between the raw data and the experiment data. Having the same description of columns, I think having 2 tables is a waste of space. The authors should decide is this is relevant or not.

[Answer]: These two tables have been replaced by the other two. Instead of introducing the structures, we think that the data in the database is more important to understand the whole manuscript.

18. Figure 1 is very poor. It should include the "definitions" to make it easier for the reader to grasp the concept of the discretized movement.

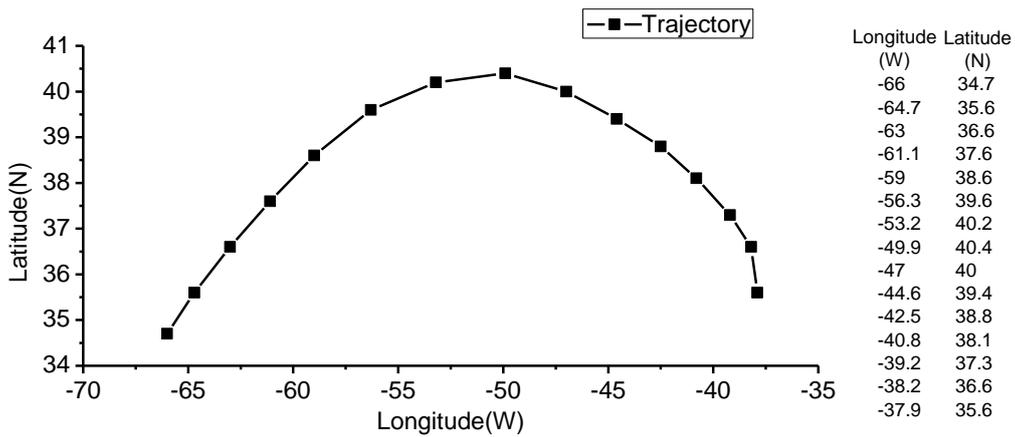[Answer]: Figure 1 has been replaced by two figures as follows.

Longitude (W)	Latitude (N)
-66	34.7
-64.7	35.6
-63	36.6
-61.1	37.6
-59	38.6
-56.3	39.6
-53.2	40.2
-49.9	40.4
-47	40
-44.6	39.4
-42.5	38.8
-40.8	38.1
-39.2	37.3
-38.2	36.6
-37.9	35.6

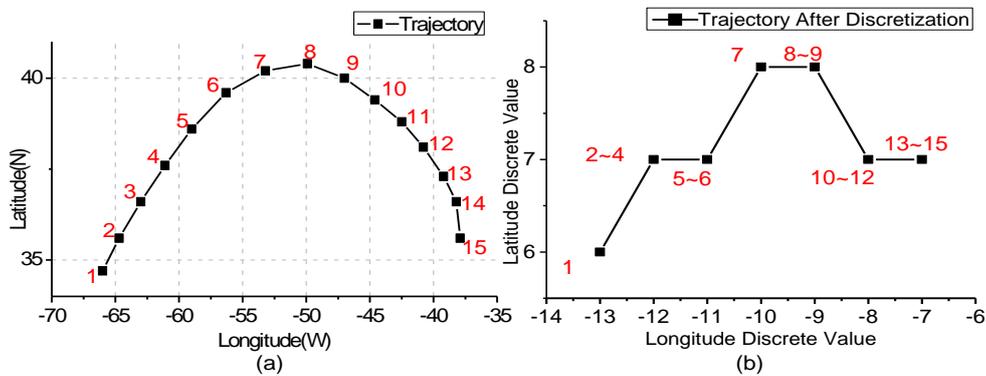Figure 3 An original trajectory of a moving object

Figure 4 The trajectory after discretization

19. Figure 4, 5, 7 have no titles in the axis of the graphs and they should be added. Also the "print-screen" shots should be modified to look presentable.

[Answer]: Figure 4 has been replaced by the table as follows.

Table 2 The datum in raw_data table

字段	year	id	num	name	traj	t_lengt	flag
	...	...	......	......	....	......	......
数据	1961	7	498	FRANCE	3,11;3,12;3,13;4,13;4,14;5,14;6,13;7,12;8,13;9,	11	0
	1961	8	499	GERDA	3,15;4,15;5,15;5,14;6,14;7,13;8,13;8,12;8,11;8,	11	0
	1961	9	500	HATTIE	2,16;3,16;3,17;3,18	4	0
	1961	10	501	JENNY	3,12;4,12;4,11;5,11;5,10;5,9;5,8;5,9;5,10;6,10;6	11	0
	1961	11	502	INGA	4,18;4,19;4,18;3,18	4	0
	1962	1	503	ALMA	5,15;5,16;6,15;7,15;7,14;8,14;8,13;8,12;7,12;7,	12	0
	...	...	......	......	....	......	......

Figure 5 has been replaced by the table and the figure as follows.

Table 3 The datum in experiment_data table

字段	id	former_traj	next_traj
数据	...	......	....

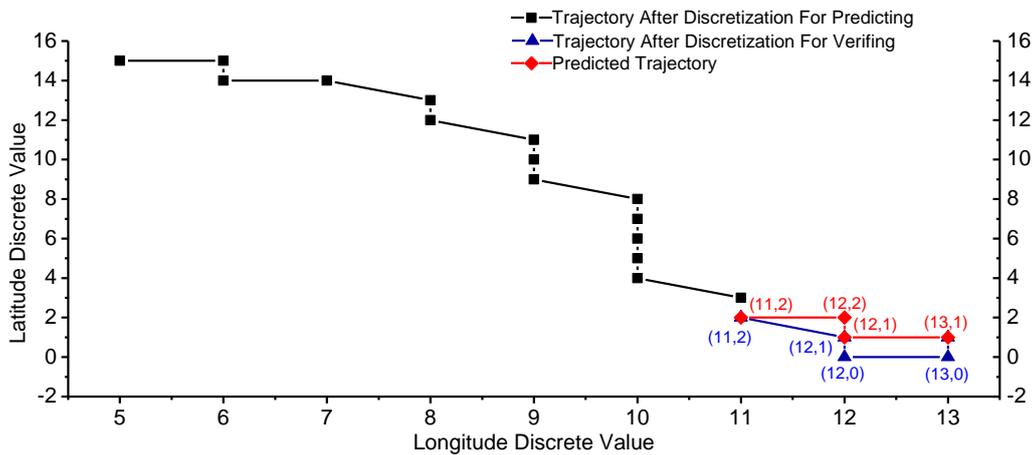| 121	3,9;4,9;4,10;5,10;5,11;6,11;6,10;7,10;7,9;7,8;8,8;8,7;9,7	10,6;11,6;11,5;12,4;12,3;12,2;12,0
122	3,9;4,9;4,10;5,10;5,11;6,11;6,10;7,10;7,9;7,8;8,8;8,7;9,7;10,6;11,6	11,5;12,4;12,3;12,2;12,0
123	5,13;6,13;6,12;6,11;6,10;6,9;6,8;7,8	7,7;8,6;8,5;9,5
124	5,13;6,13;6,12;6,11;6,10;6,9;6,8;7,8;7,7	8,6;8,5;9,5
125	5,15;6,15;6,14;7,14;8,13;8,12;9,11;9,10;9,9;10,8;10,7;10,6;10,5	10,4;11,3;11,2;12,1;12,0;13,0;13,1
126	5,15;6,15;6,14;7,14;8,13;8,12;9,11;9,10;9,9;10,8;10,7;10,6;10,5;10,4;11,3	11,2;12,1;12,0;13,0;13,1
...	......	....

Figure 7 The predicted result of the trajectory with the id number of 126

Figure 7 has been replaced by the figure as follows.

```
The current trajectory: 3,13;2,13;3,13;3,12;4,12;4,11;5,11
The actual future trajectory:6,10;6,9;7,9;7,8
The predicted result: 6,11
The rule's number for pattern matching: 57, matching length: 1
TRUE!

The current trajectory: 3,13;2,13;3,13;3,12;4,12;4,11;5,11;6,10
The actual future trajectory:6,9;7,9;7,8
Can not find any association rule, a predicted point depend on the movement tren
d would be returned: The predicted result: 7,9
TRUE!

The current trajectory: 2,16;3,16;3,15;4,15
The actual future trajectory:4,16;5,17
The predicted result: 4,16
The rule's number for pattern matching: 449, matching length: 2
TRUE!

The total number: 214, the correct number: 123, the error number: 91
```

Figure 6 Predicted results (Console output)

20. Figure 8 and 9: A better description (thorough explanation) inside the body of the manuscript (text) and in the legend of the figures should be done.
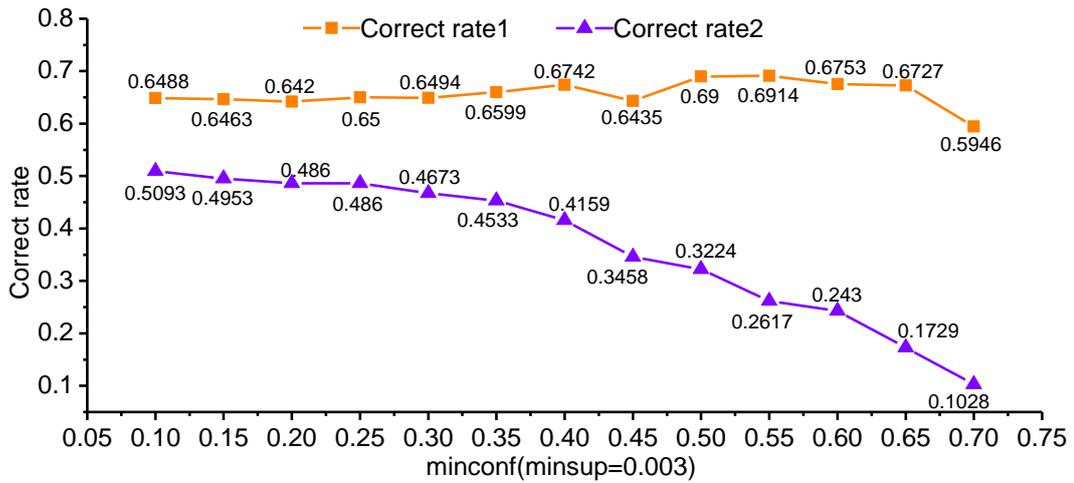
[Answer]: Figure 8 and 9 have been replaced as follows.

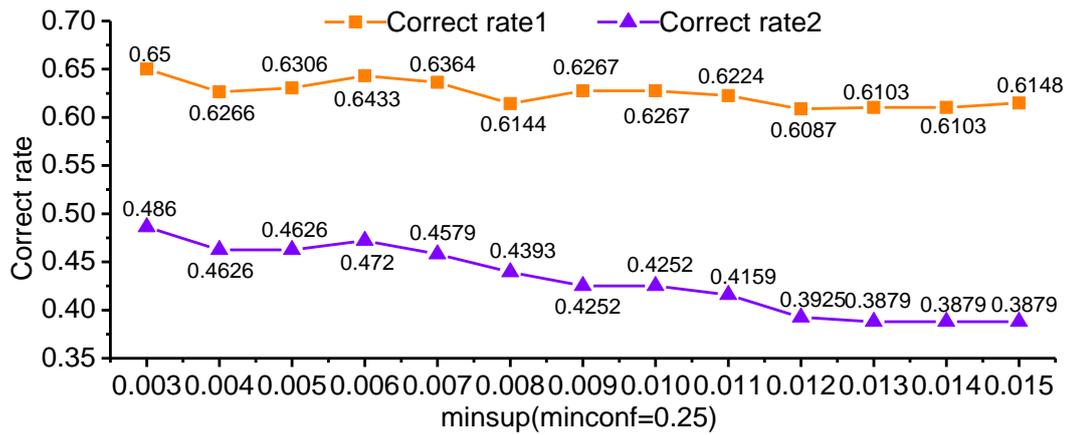Figure 8 Minconf and the correct rate when minsup=0.003

Figure 9 Minsup and the correct rate when minconf=0.25

21. I suggest that the authors add extra figures showing the results obtained in a spatial manner. This should be done in a similar manner as Figure 2 in order to visually enhance the obtained results.

[Answer]: We have tried to improve each figure in the manuscript.