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A PREDICATION WEATHER PARALLEL WITH FILTER MODEL BASED ON EXTRACT EVENT: CASE STUDY IS MALAYSIAN WEATHER FOR SHORT-TERM

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ABSTRACT

Of all of the challenges predication weather high impact to environment based on estimate time about this sufficing using random method which mean not cover whole data coming from environment. In this care for coverage whole data below filter technique with kept the time elements and analysis with reifications. A center of attention study aim predication via filter model to contribute knows immediate future in Malaysia scope to helpful aircraft and navigation system begin analog to digital by simulate processes.

In evaluate by observation will easy determinate the filter model supplementary suitable and clear meaningful likewise the random method request more processes and capacity shortest.

Keywords: Predication Data, Filter Model, Data Assimilation, Numerical Weather Predication (NWP), Structure Data.

1. INTRODUCTION

The predication term is "If you want to know what will happen in the future, you need to understand what is happening in the present" [1] as well as Respectively, on solving a huge set of numerical physical equations is mainly used for longer-term forecasting [2] the aim is necessary level to make accurate forecasting possible [3] furthermore users access to the data in near real time [4]. Rapid Environmental Assessment (REA) [5].

"NWP model is a computer program that solves the equations describing the atmospheric processes and how the atmosphere changes with time"[6], due in general conceptual predication based on two main ways are : supervised data and unsupervised data both of techniques below data mining toward condition admitted is previous data set to exploitation for target or goal by gathering group data as relevance target which more clear it processes and narrow path forward even so the weaknesses in this way high probably duplicate enquiry outcome furthermore [7] the feature used for it surface boundary of data such as have far distance to center core data; second way is high flexible processes during executing processes on-time frequency moreover a circumstance supplementary complicated role because of high role extract features from data which mean they contain structure and sorting data to ability make group based on features in different type of data starting from (texture data, image "image processing ", digitalization, analog "Raw data") all of them requesting to presented at least semi-structure to able useful and meaningful [8].

Numerical Weather Prediction (NWP) : is the science of predicting the weather using "models" of the atmosphere and computational techniques [9] Complex computer programs, also known as forecast models, run on supercomputers and provide predictions on many atmospheric variables such as temperature, Pressure, wind, and rainfall. A forecaster examines how the features predicted by the computer will interact to produce the day's weather [10]. The technique used to obtain an objective forecast of the future weather (up to possibly two weeks) by solving a set of governing equations that describe the evolution of variables that define the present state of the atmosphere [11].

Research Question

- Why are you interesting the predication weather? (Lowered data quality)
- What the effective is of predicated?
- How to proof latest model of predication?

2. DATA ASSIMILATION (DA)

Call atmospheric is an initial boundary value for aim real-time information services [12] The aim of data assimilation" is to combine observations with model forecasts and to obtain the best possible estimate (also known as the analysis) of the atmospheric flow for the purpose of prediction" [13] for popular presented data are image or numerical to collected data forward observation processes. Increase data assimilation wills fidelity accuracy furthermore whereby observations of the state of the atmosphere in this task fidelity.

Were weaknesses for reason forward to definition the initialization of collected data which mean the collected data in these fields are features rapid and modifying existing duplicated contents toward it update data and close up with time; on other hand lowered data quality [14] The output of this task is initialization as well process is inseparable from the underlying weather models.

The benefits of high accuracy data assimilation direct impact to outcome by observation clear and minimize the ambiguity represent toward confidences data forward to NWP model to provided predicated based on conditional rule whatever type aim short-term (forecasting) or long-term [15]. Due assimilation of data two type using to collecting from environment are weather radar and satellite data the categorize for each one it different accuracy and cover area toward way to presented data based on distance whole area [14] due it" process through which real world observations are incorporated into the model initial fields" [6]. Hints: The observations are typically inhomogeneous in space, in time and importantly, in quality.

2.1 Categorize Data Assimilation

In this section we describe stratification data into iteration processes during filter toward predication event wherein consider deterministic dynamical model [16] and [14, 17]. Recursive filter is used for preconditioning and background error correlation (fixed sample or off-line). "The challenge is to keep updating the optimal estimates as the new observations arrive on the scene". Justification leads to accurate forecasts despite the inevitable error in the control vector or dimensional. Suitable represent via Matrix method to optimal (minimization) to very efficient recall linear estimate such as (Cholesky decomposition algorithm [18] and LU decomposition for general matrices). Understandable the phenomenon case based on time/days to immediately clear and observes it.

Table 1
Data Assimilation Methods [11]

Classification of data assimilation methods	
Dynamic method	Statistical methods
Deterministic methods -variational approach	Statistical least squares Maximum likelihood method Bayesian framework Gauss-Markov theorem

The data assimilation has different way of data collection furthermore an event processes be post-processes of data collection task also the measurement of it linking-directed of predication and accuracy within execute tasks and recursive prepare when cone any update data synopsis it parallel between time and processes; about data collection is task and mean function accumulate data real-time or near real time but parallel between time and context data those explain main differentiation.

Equation of Data Collection (DC)

Time = t, Data set = Ds, Processes = P, Iteration = n.

$$Dc = \sum_{t=0}^{t=n} (Ds) \quad (1)$$

Equation of Data Assimilation (DA)

$$DA = P\sum_{t=0}^{t=n} (Ds) * N! \quad (2)$$

2.2 Data source

Data source is a available continuously the accessible precipitation data needs to be further processed to [5, 12, 19]; involve features are viewable and useable to be acquire analysis toward visualization (2D/3D) to smooth predicated data during integrate data or distributed data from environment [20] as well as it include schema-level correspondence and instance-level correspondence [21].

Goal

I. Discover weather (long-term, medium-term or short-term).Described, Analysis, adapted
II. Short-term day-to-day the role apply it the time period at least past two years information [22].
III. Using Suitable model based on structure data.
IV. Determinate the elements are to achieve terminus point.
V. Investigate the weakness and strength model.
VI. Evaluate and validation the dataset.

3. DATA SET MODEL

This research determination scope of Malaysia weather climate from (2008 and 2009) and will cover thirteen states (Alor Setar, Bayan Lepas, Cameron Highlands, Chuping, Datalist, Ipoh, Kota Bharu, Kuala Terengganu Airport, Kuantan, Malacca, Mersing, Petaling Jaya, Senai) The data receive from Malaysia Meteorological Department (MMD).

The probability of getting a critical ratio as large as 13932.65 in absolute value is less than 0.001. In other words, the regression weight for Year in the prediction of Month is significantly different from zero at the 0.001

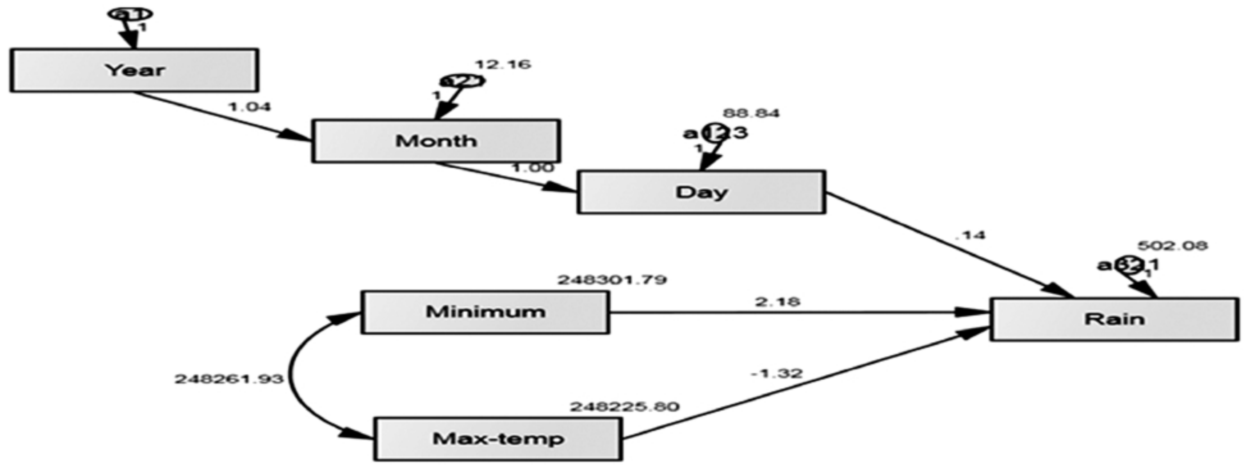


Figure 1: Data Set Model

level. These statements are approximately correct for large samples under suitable assumptions; the probability of getting a critical ratio as large as 5154.051 in absolute value is less than 0.001. In other words, the regression weight for Month in the prediction of Day is significantly different from zero at the 0.001 level; the probability of getting a critical ratio as large as 293.359 in absolute value is less than 0.001. In other words, the regression weight for Day in the prediction of Rain is significantly different from zero at the 0.001 level (two-tailed); the probability of getting a critical ratio as large as 18.36 in absolute value is less than 0.001. In other words, the regression weight for Minimum in the prediction of Rain is significantly different from zero at the 0.001 level.

About Standard Error (S.E)

Whole table the standard error is .000 mean the regression weight estimate, 1.043, has a standard error of about .000; approximate standard error. (Not available for correlations and standardized regression weights).

About Estimate

- (Month → Year) mean when Year goes up by 1, Month goes up by 1.043.
- (Day → Month) mean when Month goes up by 1, Day goes up by 1.
- (Rain → Day) mean when Day goes up by 1, Rain goes up by 0.135.
- (Rain → Max-temp) mean when Max-temp (Maxtemp) goes up by 1, Rain goes down by 1.319.
- (Rain → Minimum) mean when Minimum goes up by 1, Rain goes up by 2.183.

About Critical Ratio (C.R)

Critical ratio (C.R) The critical ratio is the parameter estimate divided by an estimate of its standard error. If the appropriate distributional assumptions are met, this statistic has a standard normal distribution under the null hypothesis that the parameter has a population value of zero. For example, if an estimate has a critical ratio greater than two (in absolute value), the estimate is significantly different from zero at the .05 level. Even without distributional assumptions, the critical ratios have the following interpretation: For any unconstrained parameter, the square of its critical ratio is, approximately, the amount by which the chi- square statistic would increase if the analysis were repeated with that parameter fixed at zero. (Not available for correlations and standardized regression weights). (Month → Year) mean dividing the regression weight estimate by the estimate of its standard error gives

$$z = 1.043/.000 = 13932.650.$$

In other words, the regression weight estimate is 13932.65 standard errors above zero.

(Day → Month) mean dividing the regression weight estimate by the estimate of its standard error gives

$$z = 1.000/.000 = 5154.051.$$

(Rain → Day) mean dividing the regression weight estimate by the estimate of its standard error gives

$$z = .135/.000 = 293.359.$$

(Rain → Max-temp) mean dividing the regression weight estimate by the estimate of its standard error gives

$$z = -1.319/.119 = -11.086.$$

(Rain → Minimum) mean dividing the regression weight estimate by the estimate of its standard error gives

$$z = 2.183/.119 = 18.360.$$

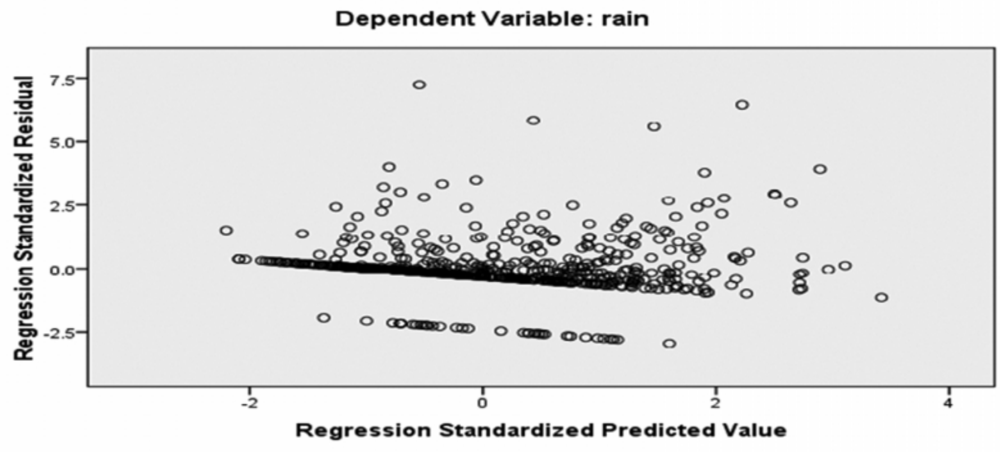


Figure 2: Rain Used Random Model

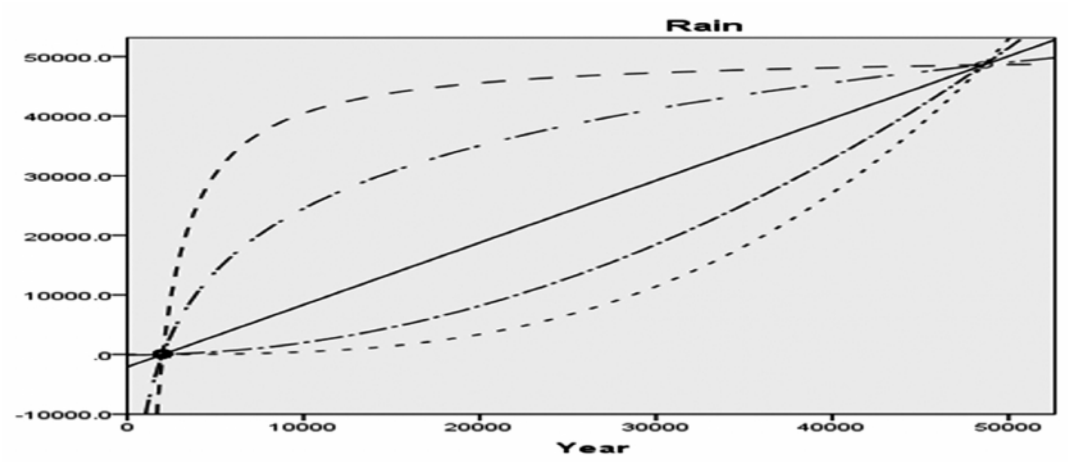


Figure 3: Rain Used Filter Model

Conditional Predication Sample

"System known as creditiview performs three-year forecasts that assign a risk classification of good, criticized, or charged-off"[23].

The predicated rainfall combination of metrological parameters including 3-years precipitation moving average, based on an input are maximum temperature ,mean temperatures, relative humidity ,mean wind speed ,maximum wind direction and evaporation [24].

In this research usage three years 2004, 2005 and 2006 to predicate the temperature based on Neural Network, the contribution of predictor to the combination is doubly weighted by its average performance through also predicator the error [25].

4. PERFORMANCE PREDICATION USING FILTER MODEL

According to [26] was determinate the data filtering concept is proposes that format conversion of data string in information storage and retrieval application also the benefits for it predicated under data -format relationship, likewise was delimitation intended for data string from environment (data bank) and was use the hold buffer to receive the data from environment contain the buffer, using first part filtering process call an interpretive processing environment second part is represent physical realization of the data filtering concept and concern IN and OUT procedural controller within go by buffer as synchronize loading as well [27] was composition of filtering functions basis on Categorization of the Filtering Processes is (Sequential processing, Batch processing, Distributed processing, Parallel processing) and Properties of Filtering Functions is (Increasing, Decreasing) for each categorization of filtering process; to decide when satisfy using filter functions by kind of the data of serialized broadcast or segmentalized data, furthermore researcher was recommended using pre-processing to reduce the cost process and low threshold value on the other hand, the evaluation the data value was divide two type depend on receive it, the first type is Upgrade evaluation value of particular data are filtered together consider the correlation between data such as Network Bandwidth; second type downgrade evaluation such as data on weather forecast.[28] was dynamic data rectification using particles filters been

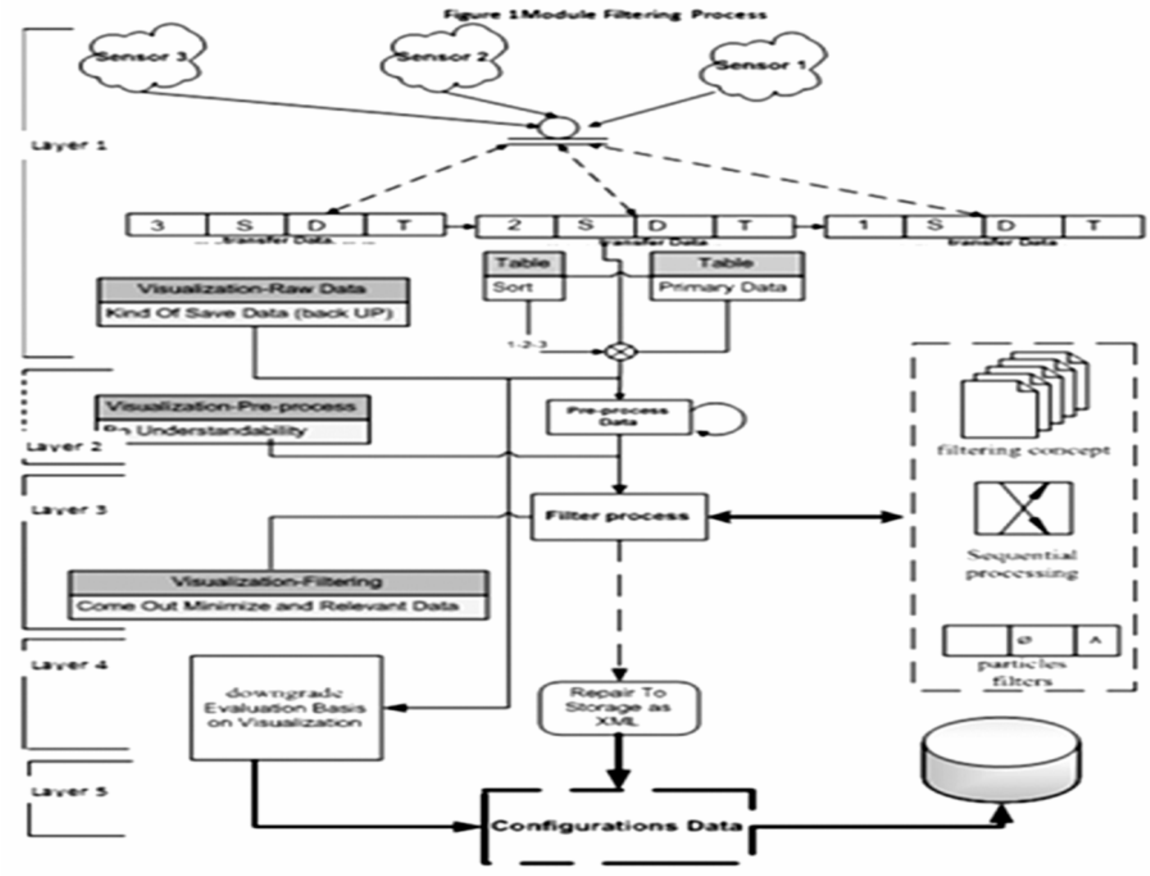


Figure 4: Filter Model Provide Predication

used adopted many mechanisms to enhance result begin of an Extended Kalman Filter (EKF) and the expectation-maximization algorithm also using probabilistic framework; initially been dealt with dynamic data rectification is definition basis on discrete random variables and the measured is noise-free to become a data is describe in the next section a particle filters for dynamic data rectification the basic idea it approximate the distribution provided to variants is particles (random sample) and weights and the researcher mention the will coverage dependent state dimension and also independent but her need as point-mass filters for the reason that increases exponentially the evaluation is get reducing the measurement error from 47.8 to 9.3 ;in relation to scope is benchmark pH neutralization process.

For this module as show figure 1 is divide it five layers basic on functionality for each layer and have some collaborative between stage furthermore close up relation and dependently in one domain on the other hand will find out how impact layer to next layer, interpretive by sequential operation as show:

Layer 1: in this layer will gathering the data from different sensors in different location by using forecasting signals usually data type from sensors is Analogue signal meaning continues signal for which the time varying feature (variable) of the signal is a representation of some other time varying quantity which advantage is the fine definition of the analog signal which has the potential for an infinite amount of signal resolution so on about simulation should be make convert analog to digital to be able understand and ease of handling a represented also to simulates to other layers; after receive the data from sensor to buffer will present such as frame data mean pre-structure data including the missing data or datum data calling abstract data.

Layer 2: pre-process is one important stage to become raw data is meaning and appear a relation between data and cleaning data or remove missing data also become no duplicate data ; is begin data pre-process remove null value because give a data Gap and broke the schema also determinate the rate for data as classify data which mean repair to make Normalization to be value 0 to 1 will consider the close up and near value likewise an pre-process is loop functional because have multiplayer methods to become clean up; After pre-process will return visualization to definition the different between raw data and data utilizing from all data need it also evaluate under downgrade method to validity work and core results.

Layer 3: filter process is on core section to ignore unwanted data absolute use multi methods firstly **Filtering Concept** identify way as measurement to get sample for make calculate such as Monte Carlo samples to determinate which is important state to sort data by time and come in buffer as well sampling with replacement from the original [29] where use consider an environment where distributed data sources continuously stream updates to a centralized processor that monitors continuous queries over the distributed data. Significant communication overhead is incurred in the presence of rapid update streams, and we propose a new technique for reducing the overhead; enables applications to trade precision for communication overhead at a fine granularity by individually adjusting the precision constraints of continuous queries over streams in a multi query workload. Second method is **Sequential Processing** multiplying at least one delayed input sample by a first input filter coefficient to generate a first multiplication result the second multiplication result to the current accumulated sum to generate an accumulated input sum, and storing the accumulated input sum correlation function having local support to filter the small (and noisy) background-error covariance's associated with remote observations;

Layer 4*:* in this layer contain two stages is Downgrade Evolutions (DE) second stage representation data using XML:

Downgrade Evaluation care for visualization each layer to convert dynamic to static to be easy comparing and find variant flanked by layers and how find the critical point in each method also will keep the process and safe the rollback if exception event appear sadly, midst use observation and regular relation as mathematical model.

Extensible Markup Language (XML): a set of rules for encoding documents in machine-readable form moreover, a textual data format with strong support via Unicode for the languages of the world. Although the design of XML focuses on documents,[30] it is widely used for the representation of arbitrary data structures XML processors are classified as validating or non-validating depending on whether or not they check XML documents for validity. A processor which discovers a validity error must be able to report it, but may continue normal processing.

Layer 5: [31] data repositories and equipment to store data there in set up data similarity for on set in addition to arrange inside group using Queue First-In First Out (FIFO) purpose to make the data sets is type structural along with obtained relational data to recall information to come nearby features for information and flexibility outcome report from stakeholder or other software, used to emphasis is completely true a quality as of information and core meaningful in addition to utilizing.

5. EVALUATION

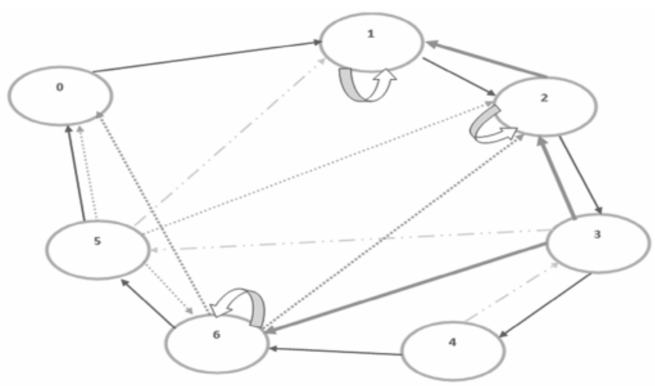
Table 2
Experimental Processes

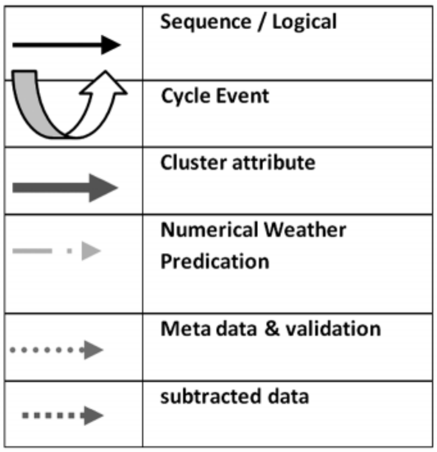
INDEXING BY RELALTION	*Sorting*	*PROCESS*	*TASK ACTION*	*EVENT*
0	0	Extract /Monitoring	Program for converting the dataset to matlab-format	P2P
1	1	SUBTRACTING PRE-FILTER	Program to detect and remove errors, caused by excessive data. This filter is the only one with potential to shrink the datasets size.	SEQUENCE
2 to 1	2	RECONSTRUCT-ING FILTER	Program to correct erroneous data or fill in gaps where data is missing. The errors could be corrected in many ways, so this filter can be changed.	CYCLE
1,2,6	3	ESSTIMATOR OF DATA BETWEEN RECORDS	Extern program that implements the algorithm for estimation of hidden/dependent data between the points for the given/the independent data.	BATCH
3,5,1	4	Classification technique	Numerical Weather Predication	CATEGORIZE AND FEATURES
0,6,2	5	Visualization	Represent meta-data as backup. Validation process	
0,2,6	6	ERROR MAPPER	Matlab matrix, with information of where erronceous or missing data in 'subtracted data' is present	CONDITIONAL

Table 3
Different Between I/O

Sort	*in*	*out*	*differentiation*
0	3	1	2
1	4	1	3
2	5	2	3
3	2	4	2
4	1	2	1
5	2	5	3
6	4	3	1

SORTING	*FREQUENCY ACTION*	*FREQUENCY SELF*	*IN*	*OUT*
0	4	Null	3	1
1	6	1 to 1	4	1
2	8	2 to 2	5	2
3	6	Null	2	4
4	3	Null	1	2
5	7	Null	2	5
6	8	6 to 6	4	3





Rate task 0	2.2500	ratetask0=fs0^2/2+(fs0)*fn0+fs0*fo0 +fn0^2/2
Rate task 1	4	ratetask1=fs1^2/2+(fs1)*fn1+fs1*fo1 +fn1^2/2
Rate task 2	6.2500	ratetask2=fs2^2/2+(fs2)*fn2+fs2*fo2 +fn2^2/2
Rate task 3	1	ratetask3=fs3^2/2+(fs3)*fn3+fs3*fo3 +fn3^2/2
Rate task 4	0.2500	ratetask4=fs4^2/2+(fs4)*fn4+fs4*fo4 +fn4^2/2
Rate task 5	1	ratetask5=fs5^2/2+(fs5)*fn5+fs5*fo5 +fn5^2/2
Rate task 6	4	ratetask6=fs6^2/2+(fs6)*fn6+fs6*fo6 +fn6^2/2

Table 4
Symbol of Processes

SORTING	*S*
FREQUENCY ACTION	*FA*
FREQUENCY SELF	*FS*
IN	*N*
OUT	*O*

$$\mathbf{FA.S} = \sum(\mathbf{FS} + \mathbf{N} + O) \tag{1}$$

Let assume NULL value replace to 0.

Case 1: Apply for four cases are (*FA*.0, FA.3, *FA*.4 and *FA*.5)

S=0, *FA*=4, *FS*=NULL, *N*=3, *O*=1

FA.0=(Null+3+1) =4

Case 2: Apply for two cases are (*FA*.1, *FA*.2)

Let assume 1 to 1 value replace to 0.

S=1, *FA*=6, *FS*= 1 to 1, *N*=4, *O*=1

FA.1=(1+4+1) =6

Sequence /logic Process

=Ratetask0+Ratetask1+Ratetask2+Ratetask3+Ratetask4 +Ratetask5+Ratetask6

=2.2500+4+6.2500+1+0.2500+1+4 = 37.5000

Numerical Weather Predication

=ratetask1+ratetask3+ratetask4+ratetask5 = 12.5000

Cluster attribute

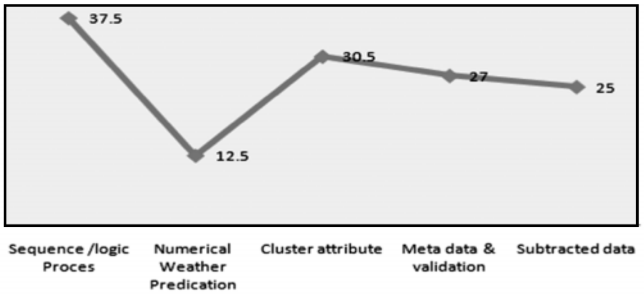
=ratetask1+ratetask2+ratetask3+ratetask6 = 30.5000

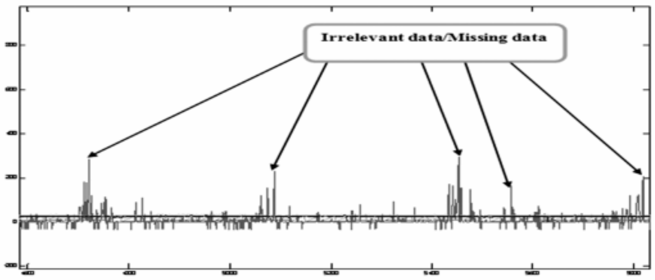
Meta data & validation

= ratetask0+ratetask2+ratetask5+ratetask6 = 27

Subtracted data

= ratetask0+ratetask2+ratetask6= 25





6. CONCLUSION

This research examines predication techniques determinate the differ nation among process using outsourced filter model to approach efficiency and accuracy results are suitable from integrity data from environment and high dynamically accumulate real-time data toward presented structure data admits it more complicated when compare random method such MentoCarlo Method; an contribution of numerical weather predication with filter model high provide to aircraft navigation to be more known to immediate future as well reduce error percentage.

7. FUTURE WORK

Enhance performance from filter technique by time and monitor update data synchronize event to decrease the Time Complexity specially replace recursive method as equation **No.2 (N!).**

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REFERENCES

[1] Noaa, "Weather Forecasting: What You Need To Know".

[2] H. Sakaino, "A Unified Prediction Method for Heterogeneous Weather Radar Patterns", in Applications of Computer Vision, 2002, (WACV 2002), *Proceedings, Sixth IEEE Workshop on*, 2002, pp. 296-303.

[3] D. Vassiliadis, "System Identification, Modeling, and Prediction for Space Weather Environments", *Plasma Science, IEEE Transactions on*, **28**, pp. 1944-1955, 2000.

[4] T. Labrot, et al., "NWP SAF Satellite Application Facility for Numerical Weather Prediction," *EUMETSAT*, 2006.

[5] S. Anstee, "Application of Numerical Weather Prediction to Rapid Environmental Assessment," Defence, Ed., ed. Edinburgh, South Australia: Maritime Operations Division Systems Sciences Laboratory, 2004, p. 30.

[6] S. Al-Yahyai, et al., "Review of the Use of Numerical Weather Prediction (NWP) Models for Wind Energy Assessment", *Renewable and Sustainable Energy Reviews*, **14**, pp. 3192-3198, 2010.

[7] D. W. Patterson, "Artifical Neural Networks", Prentice Hall, 1996.

[8] R. B. A. Wa'el Jum'ah Al_Zyadat, Hamidah Ibrahim, Masrah Azrifah Azmi Murad, "The Directs Impact to Pre-filtering Process to Weather Dataset", *Journal of Theoretical and Applied Information Technology*, **26**, No.1, p. 6, 2011.

[9] Sciencedaily, (2010), Numerical Weather Prediction. Available: http://www.sciencedaily.com/articles/n/numerical_weather_prediction.htm.

[10] D. M. Ramamurthy. (1997, 01/01/2011). Numerical Weather Prediction forecast models. Available: http://ww2010.atmos.uiuc.edu/(Gh)/wwhlpr/numerical_weather_prediction.rxml.

[11] E. Kalnay, "Atmospheric Modeling, Data Assimilation and Predictability", Cambridge University Press, 2003.

[12] W. Bell, et al., "The Assimilation of SSMIS Radiances in Numerical Weather Prediction Models", *Geoscience and Remote Sensing, IEEE Transactions on*, **46**, pp. 884-900, 2008.

[13] S. Vetra-Carvalho, et al., "Ensemble Data Assimilation in the Presence of Cloud", *Computers & Fluids*, vol., In Press, Corrected Proof.

[14] T. Bovith, et al., "Detecting Weather Radar Clutter by Information Fusion With Satellite Images and Numerical Weather Prediction Model Output," in Geoscience and Remote Sensing Symposium, 2006, *IGARSS 2006, IEEE International Conference on*, 2006, pp. 511-514.

[15] A. Stoffelen, et al., "From Measurement to Model: ERS-1 Scatterometer Data Assimilation", in Geoscience and Remote Sensing Symposium, 1993. IGARSS '93, *Better Understanding of Earth Environment., International*, 1993, **4**, pp. 1762-1764.

[16] S. L. John M. Lewis, Sudarshan Dhall, "Dynamic Data Assimilation a Least Squares Approach", A Catalogue Record for This Publication is Available from the British Library, 2006.

[17] JuanzhenSun, "High-resolution Data Assimilation for NWP: Recent Activities at NCAR", NCAR Juanzhen Sun National Center for Atmospheric Research Boulder, CO, USA.

[18] H. Wang, et al., "An Efficient Algorithm for Generalized Discriminant Analysis using Incomplete Cholesky Decomposition", *Pattern Recognition Letters*, **28**, pp. 254-259, 2007.

[19] S. Taschner, et al., "Multi-scenario Flood Modeling in a Mountain Watershed Using Data from a NWP Model, Rain Radar and Rain Gauges", *Physics and Chemistry of the Earth*, Part B: Hydrology, Oceans and Atmosphere, **26**, pp. 509-515, 2001.

[20] K. Montgomery and C. Mundt, "A New Paradigm for Integrated Environmental Monitoring", Presented at the Proceedings of the 1st International Conference and Exhibition on Computing for Geospatial Research \&\#38; Application, Washington, D.C., 2010.

[21] H. Zhao, "Semantic Matching Across Heterogeneous Data Sources", *Commun. ACM*, **50**, pp. 45-50, 2007.

[22] I. Simeonov, et al., "Algorithmic Realization of System for Short-term Weather Forecasting", *Presented at the Proceedings of the 2007 International Conference on Computer Systems and Technologies*, Bulgaria, 2007.

[23] D. W. Patterson, "Artificial Neural Networks Theory and Applications, Prentice Hall, 1996.

[24] H. A. M.T. Dastorani, H. Sharifidarani and M. Dastorani, "Application of ANN and ANFIS Models on Dryland Precipitation Prediction (Case Study: Yazd in Central Iran)", *Journal of Applied Sciences*, **10**, p. 8, 2010.

[25] F. Shu, et al., "Short-Term Load Forecasting Using Comprehensive Combination Based on Multi-meteorological Information", *Industry Applications, IEEE Transactions on*, **45**, pp. 1460-1466, 2009.

[26] R. P. Larsen, "Data Filtering Applied to Information Storage and Retrieval Applications", *Commun. ACM*, **9**, pp. 785-789, 1966.

[27] R. Sawai, et al., "Composition of Filtering Functions", in Database Systems for Advanced Applications, 2003. (DASFAA 2003), *Proceedings, Eighth International Conference on*, 2003, pp. 293-300.

[28] T. Chen, et al., "Dynamic Data Rectification Using Particle Filters", *Computers & Chemical Engineering*, **32**, pp. 451-462, 2008.

[29] l. R. Carsten Lanquillon, "Adaptive Information Filtering: Detecting Changes in Text Streams", in *ACM*, Kansas City, Missouri, United States, 1999, pp. 538-544.

[30] M. Murata. (2009, XML Media Types (draft ed.). Available: http://tools.ietf.org/html/draft-murata-kohn-lilley-xml-03.

[31] W.D.C. a. M.A. Sabol, "Near-Real-Time Coastal Oceanographic Data Products", *IEEE*, **2**, p. 4, 1996.