# Climate and construction delays: case study in Chile

Earnings are more effected by delays than going over-budget.

There are also economic, social and environmental impacts.

Climate conditions are continuously applied to agriculture, ship building etc. but no construction.

Weather information should be considered as early as possible in the planning phase.

The effect of climate on each construction activity will depend on the type of activity as well as when and where it is carried out.

There are too many factors to make hard and fast thresholds.

Coefficients are monthly in this paper.

Coefficients closer to one mean less likelihood of a delay.

Validation is difficult due to other factors such as work methodology and material supply - six similar bridges by the same contractor were used in the case study.

Varying start dates can results in very different durations.

# Automation in Construction

The effects of normal (foreseeable) not extreme weather should be taken into account.

Currently weather effects are dealt with in contracts.

Raw Climate Coefficient (RCCs) are combined to form 6 climatic reduction coefficients (CRCs) closer to 1 means less disruption.

Treatment of the RCCs as Stochastic variables rather than averages enables the overall understanding of weather conditions.

Case Study: Construction of two buildings. One is reinforced concrete (RC) and the other is Steel Structure (SS).

A modified project start date can offer significant productivity improvement. Approximately 15%- 20% in project duration most of the time.

Can be used to determine if the contractor is really entitled to compensation due to weather conditions.

The results do not account for loss in productivity or altitude.

# Paper for Review

Use of historical weather data rather than forecasting.

CRC values are fitted with sine wave curves.

A series of K, A and φ values are not very useful by themselves unless they can be inferred from any position (geographical location) without the need of having to resort to close weather stations. That is the reason why a series of maps for each sine wave parameters and type of activity were developed.

Three steps of the process:

Specify which type of activity applies to which schedule activity. Some may not by weather sensitive.

2.

Look up the sine wave values K, A and φ for each activity either manually from the maps or calculated from project location coordinates.

3.

The third stage involves fitting location specific sine wave curves to a construction schedule.

Need to understand the adding of each CRC value for each value of x for each activity.